Dental Abstracts

a selection of world dental literature

AMERICAN DENTAL ASSOCIATION

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Periodontics

The use of modified rubber base material as a radiopaque substance in periodontal roentgenography

Albert Salkind and Sol J. Ewen. *J.Periodont.* 30:341-347 Oct. 1959

A radiopaque contrast medium has been developed for use in periodontal roentgenography.

The following materials are necessary: Kerr's light-bodied permlastic rubber base impression material; finely ground silver-amalgam alloy; aluminum gun with a newly designed ultrafine lumen plastic tip; petrolatum; cotton points and college pliers, and a mixing pad.

The lumen of the plastic tip and the interior of the aluminum syringe are lubricated with petrolatum. Equal parts of rubber base, accelerator and alloy are placed on a mixing pad (Fig. 1). The alloy first is mixed into the white rubber base until an even gray color is obtained. When roentgenograms are to be made, the region is isolated with cotton rolls, the pocket dried with warm air and cotton points inserted which are retained in place until the pocket is to be filled with radiopaque material. The rubber base and alloy mix are combined with accelerator; after spatulation into a smooth paste, the mixture is fed into the plastic tip and barrel of the syringe. Pressure is applied to the plunger to express any petrolatum within the gun and tip. Once some of the rubber base alloy has been expressed, it is ready to be placed within the periodontal pocket.

Cotton points are removed from the pocket. The tip of the gun is placed to the depth of the pocket and withdrawn slightly. The medium then is expressed from the gun until the medium appears above the gingival margin. The material is injected into the pockets from the buccal and lingual approaches. Excess is wiped off level with the gingival margins. Roentgenograms are taken immediately. Shortly thereafter, when the mix has attained its usual semirigid firmness, it is lifted out of the pocket with an explorer or college plier. In many instances, a three-dimensional replica of the pocket is obtained.

In a patient with moderate periodontitis, an upper left lateral incisor (Fig. 2, left) was selected for roentgenographic study. A gutta-percha point was inserted to the base of the pocket and cut at the gingival margin (Fig. 2, center). After the point was removed, the radiopaque material was prepared and inserted into the pocket. A roentgenogram of the region is shown in Figure 2, right. When the material had set, it was removed *in toto* with an explorer. This rubber form (Fig. 2, below right) was a three-dimensional replica of the pocket.

The radiopaque substance described fulfills most of the requirements for an effective contrast medium. It can be introduced easily into the pocket and to the full depth of the pocket. The material is nonirritating to the periodontal tissues.

Figure 1 Tubes of rubber base material, aluminum gun, silver alloy, mixing pad and spatula. Note newly designed plastic tip (center)

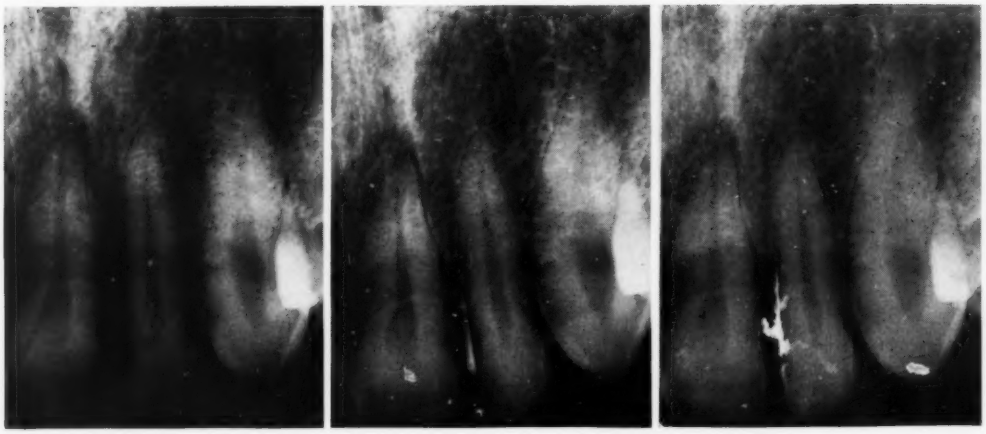


Figure 2 Left: Upper left lateral incisor region. Center: Same region with gutta-percha point in place. Right: Same region with radiopaque substance in place. Beaded portion indicates location of gingival margin. Below: Three-dimensional rubber base alloy replica of mesial pocket

It is adequately opaque and can be distinguished from the surrounding hard tissues. It permits making a three-dimensional replica of the pocket before, during and after treatment. The material opens the way to new possibilities of studying periodontal pockets.

In most instances, the material is readily removable. However, in deep bifurcations and trifurcations, and tortuous pockets, remnants of the material may remain, to be removed only with difficulty. For this reason, the material should be used primarily as a research tool rather than a clinical aid.

650 Central Avenue, Cedarhurst, N. Y.

Periodontal inflammations: a bacteriological view

J. Kominek, E. Rozkovcová and L. Zahorová. *Českoslov.stomat.* 59:36-41 Jan.-March 1959

Clinical practice has proved that antibiotic therapy is most likely to control the invasiveness of an established periodontal infection, and to produce spontaneous actions which may prevent, improve or cure these inflammatory conditions if the treatment has been started at the time the infection was in its diffuse stage.

Clinical practice, however, indicates that the various antibiotic agents now available should not be used carelessly or haphazardly in dental practice, because their antibacterial potency may produce harmful effects in patients and may promote a bacterial resistance to the specific antibiotic agent used.

Synergism may accompany the simultaneous use of two or more antibiotics. Various authors, however, under limited conditions of in vitro and animal experiments, claim to have demonstrated an antagonism between penicillin and the broad spectrum antibiotics.

No evidence of such an antagonism between penicillin and one of the broad spectrum antibiotics was found in an investigation recently made at the Second Dental Institute of the University of Prague, Czechoslovakia.

The specimens examined consisted of suppurative tissue obtained from 56 patients with periodontal disease, by intraoral and extraoral biopsies.

The following microorganisms were most frequently found and isolated: (1) *Streptococcus*

pyogenes haemolyticus; (2) *Staphylococcus pyogenes* var. *aureus;* (3) *Staph. pyogenes* var. *albus;* (4) *Diplococcus pneumoniae;* (5) *Neisseria catarrhalis* and other *Neisseriae;* (6) *Streptothrix alpha;* (7) *Escherichia coli,* and (8) *Proteus vulgaris.*

The resistance of these microorganisms to the following antibiotic agents was tested: (1) all available penicillins; (2) chlortetracycline; (3) streptomycin; (4) chloramphenicol, and (5) tetracycline.

The results of sensitivity tests were as follows:

1. *Str. pyogenes haemolyticus* proved to be resistant to streptomycin in 12 per cent of the patients and to chlortetracycline in 12 per cent of the patients; there was no demonstrable resistance to the other three antibiotic agents.

2. *Staph. pyogenes* var. *aureus* proved to be resistant to penicillin in 33 per cent; to streptomycin in 8 per cent; to chlortetracycline in 62 per cent; to chloramphenicol in 8 per cent and to tetracycline in 46 per cent.

3. *Staph. pyogenes* var. *albus* proved to be resistant to penicillin in 36 per cent; to streptomycin in 17 per cent; to chlortetracycline in 50 per cent and to tetracycline in 50 per cent; there was no demonstrable resistance to chloramphenicol.

4. *D. pneumoniae* proved to be resistant to streptomycin in 6 per cent; to chlortetracycline in 9 per cent; there was no demonstrable resistance to penicillin, chloramphenicol and tetracycline.

5. *N. catarrhalis* and other *Neisseriae* proved to be resistant to streptomycin in 3 per cent and to chlortetracycline in 3 per cent; there was no demonstrable resistance to penicillin, chloramphenicol and tetracycline.

6. *Streptothrix alpha* proved to be resistant to penicillin in 8 per cent; to streptomycin in 8 per cent and to chlortetracycline in 8 per cent; there was no demonstrable resistance to chloramphenicol and tetracycline.

7. *Esch. coli* proved to be resistant to penicillin in 100 per cent; to streptomycin in 50 per cent; to chlortetracycline in 100 per cent and to tetracycline in 100 per cent; there was no demonstrable resistance to chloramphenicol.

8. *P. vulgaris* was resistant to all five antibiotic agents in 100 per cent.

The results indicated that under present conditions in Czechoslovakia penicillin still is a valuable and effective antibiotic although data from foreign countries reveal that a resistance from 70 to 90 per cent has been observed. In instances in which bacterial resistance to penicillin has been established by bacteriological methods or in which clinical evidence exists that penicillin fails to be effective in the treatment of periodontal inflammations, other antibiotic agents or a combination of two or more antibiotics should be used.

The timing of periodontal treatment with antibiotic therapy is of considerable importance. Care should be taken to perform indicated surgical interventions in the presence of infections and inflammations after the start of the antibiotic therapy and before the development of bacterial resistance. Obvious local or general physiologic derangements are frequently overlooked or disregarded in the almost routine antibiotic treatment of established periodontal infections.

Second Dental Clinic of the University of Prague, Czechoslovakia

Vitamin preparations in treatment of periodontal disease

Zahnärztl.Praxis 13:153 July 1, 1959

Q.—Does the administration of vitamin preparations containing a mixture of vitamins (nicotinamide, thiamine hydrochloride, riboflavin, ascorbic acid, citric acid, pyridoxamine and yeast extract) constitute a rational treatment form in instances of gingivitis, glossitis, stomatitis, periodontitis and periodontosis? For years, I have used such vitamin mixtures as supplementary treatment whenever deficiency or disturbance of the vitamin intake has been suspected as the only (or the main) causative factor. The physician of one of my patients, however, stated that vitamins play no significant parts in prevention or treatment of these diseases.

A.—Vitamin preparations such as described are indicated for prevention and treatment of avitaminoses. In instances of gingivitis and stomatitis, possibly caused by deficiencies of vitamins in the diet, the administration of vitamin mixtures is justified. The physician, however, is correct that in instances of periodontal disease the elimination of irritants by conservative procedures and removal of the periodontal pockets by surgical inter-

vention are indicated rather than the therapeutic use of vitamin mixtures which may lead to the practice of polypharmacy. Because there are many causative factors that produce periodontal disease, no single treatment method has been developed which obtains success in all instances.

13b München-Gräfelfing, Germany

Effects of certain factors on bacteremias resulting from gingival resection

Benjamin Vargas, C. Kenneth Collings, Lucy Polster and Sol Haberman.
J.Periodont. 30:196-207 July 1959

An investigation was made to study the incidence of bacteremia after gingival resection, and the factors that may influence it. The subjects consisted of 89 patients treated at the Baylor Dental College, in whom the diagnosis of periodontitis and the need for gingival resection had been determined. All patients received a dental prophylaxis five to seven days before the tissue resection was performed. One hundred and fourteen blood samples were collected from the 89 patients, the time of collection ranging from 20 to 130 minutes after the initial surgical incision. In 25 patients, a second blood sample was taken when the patient returned for a second surgical procedure.

Of the 114 blood samples, 28 (24.5 per cent) showed bacterial growth. Of the samples collected from the 25 patients from whom two samples each were obtained, 17 yielded negative cultures in both instances, 6 gave positive cultures on both occasions, and 2 showed bacterial growth in the first blood sample only.

The highest incidence of positive cultures (31 per cent) was found in blood samples obtained in the 46 to 60 minute period. In those samples obtained in the first 60 minutes, the incidence of positive cultures was 25 to 30 per cent. After 60 minutes, the incidence of positive cultures dropped. This decrease correlated well with the fact that the surgical procedure usually was being completed at that time, and a minimum of additional trauma was produced. When the data were submitted to the chi square test, it was found that time of blood culture collection was not significant. However, there was a trend toward significance.

Tooth mobility and depth of gingival sulcus were not important in the occurrence of bacteremias.

The incidence of positive cultures was slightly higher in patients having gingivectomies on more than one quadrant at a time. The incidence of positive cultures was higher when the lower quadrants were involved.

Alpha hemolytic streptococci were the most frequently isolated microorganisms, appearing in all cultures of the gingival sulcus, in 99.11 per cent of cultures from the gingival surface, and in 53.57 per cent of the blood cultures. All of the microorganisms found were highly sensitive to penicillin, chloroamphenical palmitate, erythromycin and novobiocin sodium. The microscopic sections showed nidi of microorganisms in the epithelial and connective tissue regions of the excised gingivae.

The incidence of bacteremia reported here approximates that reported during exodontic procedures.

In a control study, 55 patients were used to determine when bacteremias are most common during dental "prophylaxis." The patients were divided into two groups, those from whom blood samples were collected 15 minutes after the start of the procedure, and those whose blood was collected 20 minutes or more after the treatment had started. Five of 31 patients (16.1 per cent) in the first group gave positive blood cultures. No positive cultures were obtained from the 24 patients from whom blood samples were taken 20 minutes or more after the procedure had started. In patients given prophylactic treatment, the bacteremias were fewer, occurred earlier, and apparently lasted for a shorter time. It can be assumed that the less the trauma and disturbance of the gingivae, the fewer bacteria will be found in the blood stream. Consequently, methods of judging the condition of gingivae might be an index as to the likelihood of bacteremias resulting from manipulation and surgery.

College of Dentistry, Baylor University, Dallas, Texas

Operative dentistry

Experimental study on radioactive phosphoric acid in silicate cement

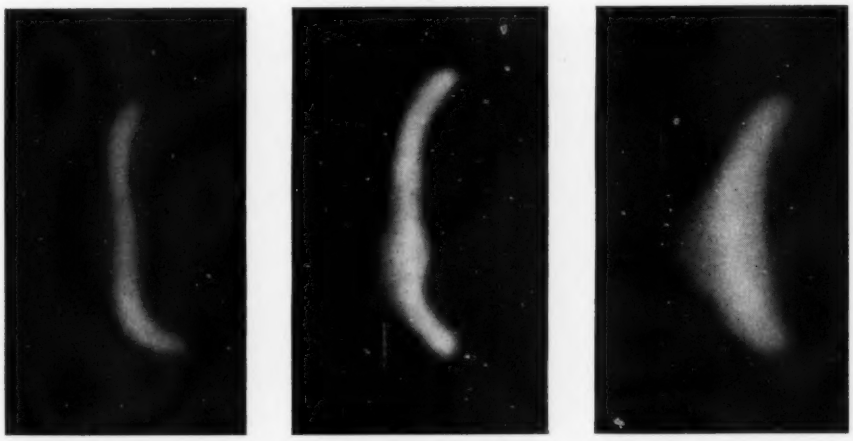
Yasushi Takada, Hiroyuki Tamura, Mamoru Sato, Juichiro Soeda, Sakon Takigawa and Kazuo Sakai. *Shikwa Gakuho* 10:1-3 Oct. 1958

When silicate cement is applied directly to the cavity floor, it can cause lesions of the pulp. There has been much debate as to what component of silicate cement causes alterations in the pulp. In an attempt to ascertain the cause for the alterations, radioactive phosphoric acid was added to silicate cement. One millicurie of radioactive phosphoric acid per cubic centimeter solution was added to the liquid of the cement, at the rate of about 10 per cent. The cement was kneaded to the texture normally needed to fill teeth. Cavities in the teeth of dogs were filled with the silicate cement, no lining being used. The filled teeth were removed 1, 2, 4 or 7 days after filling, were sectioned, and radioautographs were made by the contact method.

The illustration shows radioautographs of teeth filled with silicate cement to which radioactive phosphoric acid had been added. These views were taken 1, 2 and 4 days after filling. One day after filling, no radioactive phosphorus could be observed permeating the cavity wall; after two days, permeation could be observed in the direction of the dentinal tubules; after four days, the radioactive phosphorus had reached the pulp cavity. Radioautographs taken seven days after filling showed the same results as those taken after four days.

The major factor in silicate cement which causes alterations in the dental pulp is the phosphoric acid or phosphate, which is drawn forth after the cement hardens.

Tokyo Dental College, Tokyo, Japan



Radioautographs of dogs' teeth filled with silicate cement containing labeled radioactive phosphorus. Left: One day after filling. Center: Two days after. Right: Four days after

Prosthetic dentistry

A means of supporting paralyzed facial muscles

A. J. W. Turrell. *D.Practitioner* 9:218-227 May 1959

Facial paralysis is treated by (1) the provision of a dental support, (2) physiotherapy and (3) surgery. The dental support that has been favored is the hook of acrylic resin reinforced with metal, attached to the patient's upper denture or to a cast splint cemented to the upper posterior teeth when the natural dentition is present. The hook passes round the angle of the mouth so as to lift it to the natural position. No matter how skillfully this intraoral hook is constructed, it is always obvious and, if worn for a long period, usually causes drooling of saliva.

The author has designed a removable intraoral appliance which supports the cheek and lifts the angle of the mouth. The appliance can be used on all patients, whether with a complete denture, a partial denture or with all the natural teeth present. Recovery has never failed to be complete in those patients with Bell's palsy who have been supported with this appliance.

Figure 1 illustrates construction of the appliance when the patient is wearing an upper complete denture. The appliance consists of a tube, retained in the denture, and a U-shaped strip of oval bar wire which carries the support made of acrylic resin.

A rectangular strip, ⅛ inch wide by 1½ inches long, is cut from a sheet of gauge 4 polished stainless steel. The strip is bent in the middle over a straight strip of stainless steel oval bar wire, gauge 3. The tube so formed is made to fit the bar by tightening the free ends in a vise. The free ends may be welded or soldered together so that the tube retains its shape more accurately. The free ends are roughened to improve the retention of the tube to the denture.

To fix the tube to the flange of the denture, a

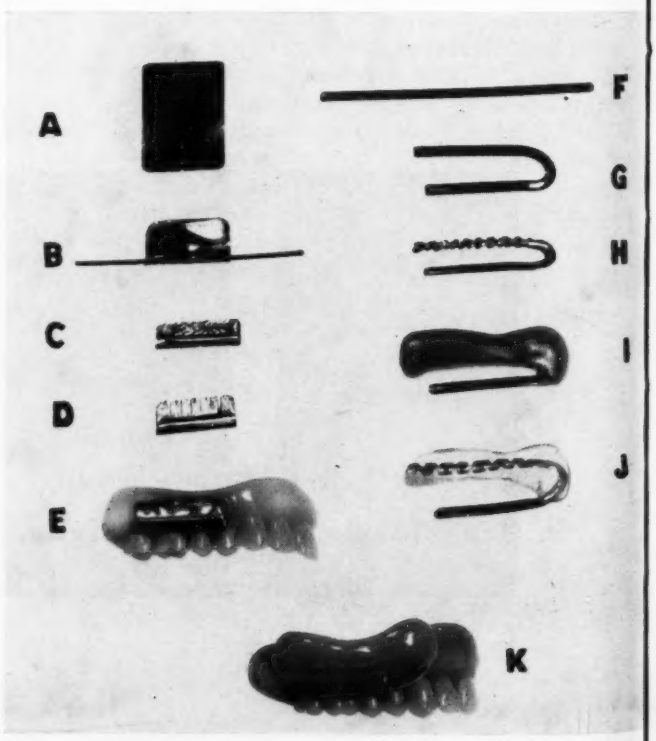


Figure 1 The construction of the tube. F-J: The construction of the support. K: The completed appliance on a complete denture

recess is cut in the buccal flange of the denture on the afflicted side below the necks of the bicuspid and molars. This recess accommodates the retaining part of the tube which may have to be reduced in width because it must not extend to the periphery of the denture. The tube should be parallel to the occlusal surface of the teeth. Self-curing acrylic resin is used to retain the tube in the flange of the denture. Figure 1, E, shows the tube retained in the denture.

A length of stainless steel bar 3 inches long is bent in the center to form a tight U (Fig. 1, F and G). The legs of the U are about ¼ inch apart. When one leg of the bar is slid into the tube, the other should lie above it but not above the periphery of the denture. The upper leg and that portion of the lower leg anterior to the tube should be bent to follow the curve of the flange of the denture. The upper leg of the bar should be roughened to improve the retention of the acrylic support which is to encircle it (Fig. 1, H).

To make the impression of the sulcus for the acrylic support, the roughened leg of the U-shaped bar is covered with softened modeling wax. The flange of the denture is smeared with petrolatum, and the other leg of the bar is pushed into its tube.

The support should not be more than ¼ inch wide. It is the height of the support which, by distending the sulcus upwards, gives support to the sagging tissues. The modeling wax is extended slightly above the periphery of the denture, and with the support in position on the denture, the height of the wax is increased by nearly ½ inch with soft registration wax, and the denture is seated firmly in the mouth.

The cheek on the affected side is then pulled gently outwards and downwards, two or three times. The excess wax displaced buccally by this maneuver widens the support more than ¼ inch and is removed. After the wax has been chilled, it is made as smooth as possible (Fig. 1, I). The support is removed from the tube, and the wax replaced by heat-cured acrylic resin (Fig. 1, J). The completed support is shown in Figure 1, K).

The support is so made that it can be removed easily by the patient, because some patients with facial paralysis tend to favor the affected side when eating, and to masticate exclusively on the sound side. Under these conditions, the presence of the support may tend to stretch the paralyzed muscles more than if it were removed. Also, with the support removed, retention of the denture is not impaired during mastication and the risk of injuring the tissues of the sulcus is reduced.

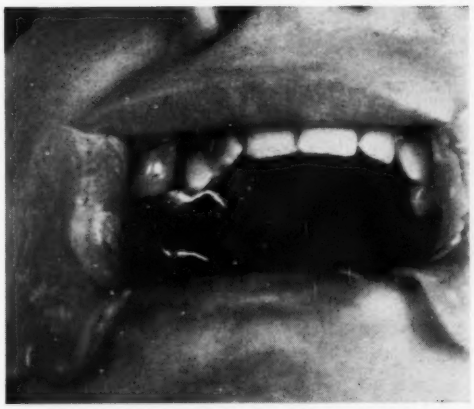


Figure 2 A cast cap splint applied to the upper posterior teeth, to which is soldered the tube which carries the acrylic support. All the natural teeth are present

The removable intraoral device also may be used with patients wearing partial upper dentures, or with absent molar teeth on the affected side but with no partial denture, or with patients having all their natural teeth on the affected side (Fig. 2).

The Charles Clifford Dental Hospital, Sheffield, England

Disinfection of acrylic dentures

H. Lauffer and F. Maderner.
Deut.zahnärztl.Zschr. 14:486-490 March 15, 1959

Disinfection of all dentures before insertion or reinsertion is indicated not only to remove or destroy pathogenic microorganisms accumulated on the denture surface but also to safeguard the dentist, his assistant and technician against infection when repairing dentures worn by patients with infectious diseases.

Most commonly used disinfectants cannot be used on acrylic dentures because of their discoloring or staining properties, a comparatively high toxicity or the risk that they may produce chemical or physical changes in the acrylic material.

The effects of the following six disinfectants: (1) hydrogen peroxide, 30 per cent; (2) chloramine, 4 per cent; (3) formaldehyde, 40 per cent; (4) quaternary ammonium compound (Zephirol-Bayer), 1:1,000; (5) acetyltannin-silver-protein solution (Targesin-Gödecke), 10 per cent, and (5) phenylmercuric borate solution (Merfen-Zyma), 4 per cent, were investigated at the Dental Institute of the University of Tübingen, Germany.

The following criteria were considered: (1) effectiveness; (2)availability; (3) harmlessness to human tissues; (4) absence of chemicophysical changes after contact with acrylic resins, and (5) no decrease in bacteriostatic property after contact with saliva and protein.

After a duration of action of from five to ten minutes, phenylmercuric borate (Merfen-Zyma) in a 4 per cent solution proved to be superior to the other five disinfectants in obtaining and maintaining an aseptic condition on the surfaces of acrylic dentures.

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Variations in the mandibular rest position and freeway space in patients with partial dentures

Kalervo K. Koivumaa. *Odont.Tskr.* 67:176-188 May 29, 1959

The variations in the mandibular rest position and freeway space were examined in 333 patients with partial dentures at the Dental Institute of the University of Umeå, Sweden.

The patients were divided into two groups: Group I consisting of those who had worn their dentures for about one year, and Group II of those who had worn their dentures for at least six years.

A specific method was used which was designed to measure the amount of freeway space at the recorded mandibular rest position. Several analyses of the data thereby accumulated were made to study the existing variations and relations.

The principal findings were that variations in the mandibular rest position and freeway space in different stages of mandibular growth and development could be determined in individual patients and in patient groups. The smallest intra-individual variation in the freeway space at rest position in a specific stage was about 2 mm. The medium value varied between 2.8 ± 0.22 and 4.3 ± 0.28 mm. No specific variation pattern, however, could be established either in individual patients or among patient groups. There existed a slight tendency toward an increase in the amount of freeway space with orientation and fatigue in Group I (<5 mm.) as compared to Group II (>5 mm.), but in neither group was there sufficient evidence to make any generalization.

The conclusions were as follows:

1. Variations in the mandibular rest position and freeway spaces were observed in the serial roentgenographic recordings in all 333 patients. These variations, however, showed no tendency toward specific patterns or orientations.

2. There were significant differences in the average amount of freeway space between the groups as well as between individuals.

3. There were significant differences in the variability of the mandibular rest position between individuals.

4. There were significant differences in the average amount of freeway space at different developmental stages. No definite pattern could be determined to predict the variability in individual subjects.

5. There was no evidence for a correlation between the mandibular vertical rest position and the position of the hyoid bone.

As a result of this study it can be assumed that mandibular rest position is too variable a factor to be reliable in the construction of partial dentures. The occlusal height of the remaining teeth is a better indication for the bite height of the partial denture.

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Anesthesia and analgesia

Consciousness and pain during apparent surgical anesthesia: report of a case

Thomas D. Graff and Otto C. Phillips.
J.A.M.A. 170:2069-2071 Aug. 22, 1959

The introduction of curare as a neuromuscular blocking agent in clinical anesthesia (Griffith and Johnson, 1942) set the stage for radically different concepts in the practice of surgical anesthesia. Here was a means whereby satisfactory anesthesia could be offered without the necessity of maintaining high blood and brain tissue levels of inhalation or intravenous anesthetic agents. The demonstration by Foldes and others (1952) of the close control of neuromuscular paralysis afforded by a continuous infusion of dilute succinylcholine promoted acceptance of this technic. The authors have utilized this form of anesthesia in several thousand surgical and gynecologic operations and have been favorably impressed with it as a technic providing a smooth course of surgical anesthesia, with a minimum of side effects and a short postoperative waking time.

Recently, during such an anesthetic procedure, a complication arose which brought forcibly to our attention a potential hazard involved in this concept of anesthesia. A patient, after recovery, gave evidence of having been intermittently conscious during the three-hour period of supposed anesthesia and stated that she had suffered extreme pain during much of the operation.

The patient was a 40 year old woman who had entered the hospital with the diagnoses of cystocele and rectocele. She was scheduled for a vaginal hysterectomy and an anterior and posterior colporrhaphy.

The evening before the operation, the patient was given secobarbital and amobarbital, 100 mg., and perphenazine, 4 mg., each by mouth. In view of the patient's history of side reactions to opiates, no narcotic was given preoperatively, the medication consisting of 5 mg. of perphenazine and 0.4 mg. of atropine intramuscularly one hour before the induction of anesthesia.

Anesthesia was induced with intravenous administration of thiopental sodium, 200 mg. in a 2 per cent solution. The patient was given a continuous intravenous infusion containing 0.1 per cent lidocaine and 0.025 per cent succinylcholine. Nitrous oxide and oxygen at a 4-liter and 2-liter flow, respectively, in a semiclosed circle-absorber system then was administered under a mask. The operative procedure lasted 170 minutes and the anesthesia 190 minutes, during which time 400 mg. of thiopental sodium, 500 mg. of succinylcholine and 2 Gm. of lidocaine were used. There were occasional episodes of resistance to inspiratory assistance, and at one point during the operation the patient (in a lithotomy position) suddenly moved her right leg.

Despite this apparent uneventful anesthetic course, the patient had a most unpleasant experience to relate to the surgeon and the anesthesiologist. She had been intermittently conscious and unconscious during the anesthetic period. She volunteered the information that an airway had been inserted in her mouth and removed at some later time. She reconstructed details pertaining to the discussion of the blood loss and the decision to start administration of the second unit of blood. She also experienced dull, unbearable pelvic, lower back and perineal pain during much of the operation.

Although the minimal effect on homeostasis of the newer anesthetic technics is of recognized value, an awareness of the possibility of an anesthetic experience such as the one described should serve to make one pay greater heed to signs of light planes of anesthesia. Galla and others (1958) have recently re-evaluated the traditional signs of anesthesia as they might apply to newer anesthetic agents and technics. Two signs indicate light planes of anesthesia in the patient under curare anesthesia: (1) increased resistance to inflation of the lungs, and (2) pupillary dilation in response to surgical stimulus. Signs of unduly light anesthesia may be most subtle. The use of the neuromuscular blocking agents amplifies the chances of a conscious and uncomfortable patient. Perhaps the addition of an

opiate to the preanesthetic medication may have sufficed to have given the patient the required amount of basal narcosis. A larger dose of thiopental sodium than the 400 mg. used for the three-hour procedure certainly would have been justified and could have induced the additional anesthetic depth necessary.

Hospital for the Women of Maryland, Baltimore, Md.

Anesthesia for specific dental operations in a mental hospital

Eugene P. Leoni, William J. Logue and Lyon P. Strean. *Pennsylvania D.J.* 26:28-29 June 1959

Mongoloid, epileptic and cardiac patients in mental hospitals are either uncooperative or require extensive operative procedures, and thus are considered a poor risk for local anesthesia.

Two hundred and fifty-six mentally retarded women patients received general anesthesia for dental operations, including removal of teeth, impactions, cysts, benign tumors and the setting of jaw fractures.

On the day before surgery, complete laboratory studies were performed, and all medication (such as tranquilizers, barbiturates, and diphenylhydantoin sodium) was stopped. A half hour before surgery each patient received morphine sulfate (1/6 to 1/4 grain) or meperidine hydrochloride (50 to 100 mg.); also, 1/150 grain atropine sulfate to dry secretions, and 0.5 Gm. streptomycin combined with 300,000 units of penicillin, given by injection. There were no adverse effects from any of these agents. The antibiotic therapy was continued for two postoperative days.

Because of the high incidence of cardiac disease, vinyl ether was used for induction and ethyl ether was used for maintenance. Both agents were administered by the drip method, by a physician. The average duration of anesthesia was 45 to 60 minutes.

Throat packs, tongue clamps and aspirators were used routinely. Since the patients were kept in a light plane of anesthesia, many of them had a feeling of nausea before leaving the operating room. A liquid diet was maintained for three days.

Because of the care exercised in the selection and administration of the anesthetic agents, and the care before, during and after the operations, all 256 patients survived and with no morbidity. Vinyl ether and ethyl ether are safe anesthetic agents for use in mentally retarded patients.

Pennhurst State School, Spring City, Pa.

A single-blind comparison of codeine phosphate and dextro propoxyphene hydrochloride

Allen J. Koslin. *Oral Surg.,Oral Med.& Oral Path.* 12:1203-1206 Oct. 1959

Dextro propoxyphene hydrochloride, an orally administered synthetic analgesic, has been reported to be equal in analgesic potency to codeine phosphate. It has no addictive liability.

In a single-blind study, 541 patients undergoing various oral surgical procedures at the School of Dentistry, University of Alabama, were the subjects. Dextro propoxyphene hydrochloride 32 mg. was the test agent, and codeine phosphate 32 mg. the control. Both agents, identical in shape, size and color, were coded and packaged by a disinterested party. Each patient was instructed to take one capsule every four hours and to consume ten capsules. The author interviewed the patients two or three days later and recorded the relative analgesic potency and side effects of the coded agents. The relative analgesic potency was scored as follows: 0 = no pain relief; 1 = relief inferior to previous medications; 2 = relief comparable to previous medications, and 3 = relief superior to previous medications.

Of the patients tested, 85 per cent received adequate to superior pain relief with codeine phosphate, and 80 per cent received adequate to superior pain relief with dextro propoxyphene hydrochloride. The incidence of side effects was 3.2 per cent with dextro propoxyphene, and 33.7 per cent with codeine phosphate. Nausea, gastric distress, vertigo, drowsiness and constipation, in that order, were the most common side effects.

The satisfactory analgesic potency of dextro propoxyphene, its minimal side effects and its exemption from the Harrison Narcotic Act make this drug a promising oral analgesic for use in dental practice.

School of Dentistry, University of Alabama, Birmingham, Ala.

Orthodontics

Orthodontic opening of the median palatine suture of the maxilla

M. Grobler. *J.D.A.South Africa* 14:347-353 Sept. 1959

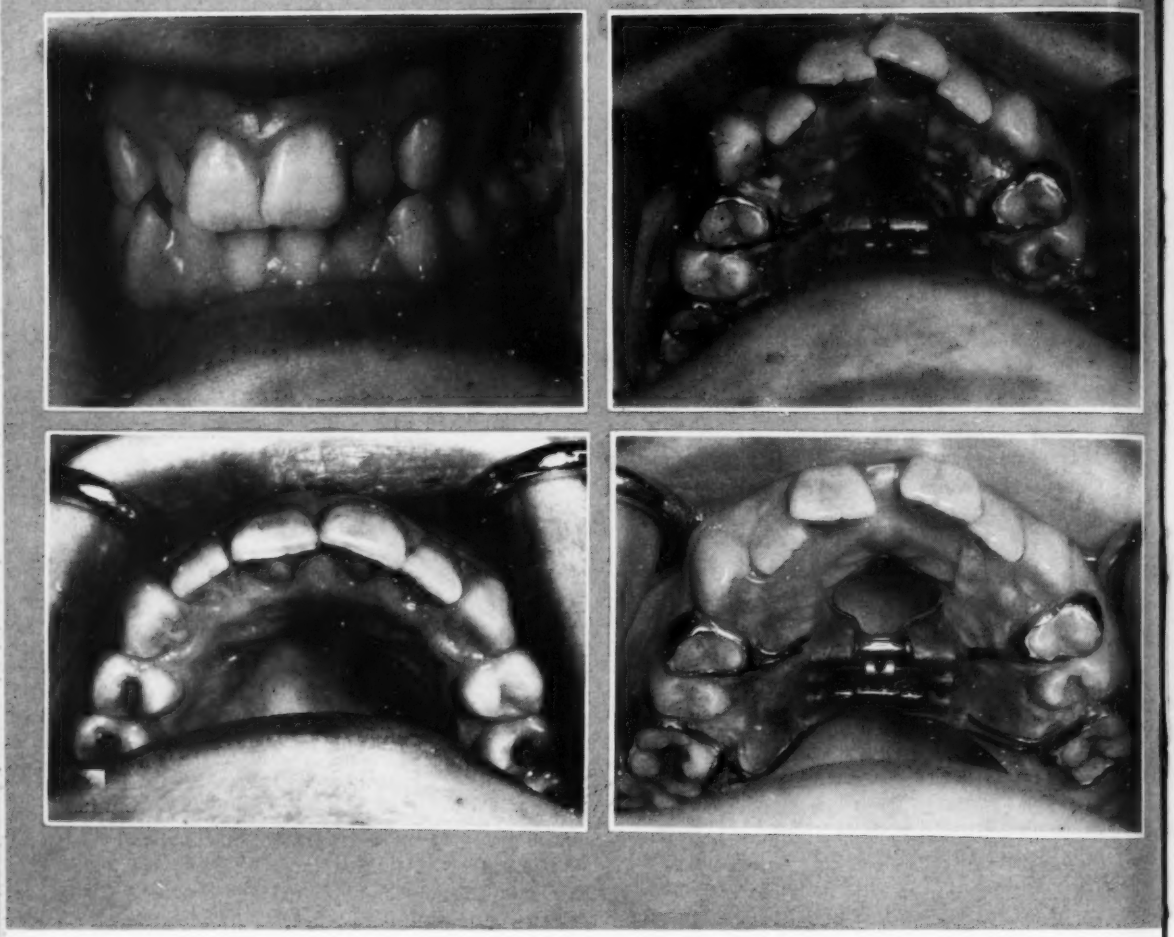
Although rapid expansion of the midpalatal suture is by no means a new procedure, the uses and indications have not been clearly defined in the light of recent concepts of the limitations of orthodontic treatment. This comparatively drastic form of treatment, however simple it may be to execute, should not be attempted in every instance of compression and crowding of the maxilla for the sake of avoiding extractions. The indications for this treatment are as follows: (1) bilateral cross-bite; (2) unilateral cross-bite with a deviation of the mandible to the affected side; (3) severe compression of the maxilla where the mandibular arch appears to be held in a distorelation by the tapering upper arch; (4) severe crowding where extraction is contraindicated, for instance, where the soft tissue of the mouth could not tolerate a lengthy period of treatment with fixed appliances. The best results are obtained on patients between the ages of 8 and 20 years.

The appearance and physiognomy of the patient often is characteristic. He is slender in build, with narrow face and narrow nose. He is a mouth breather and suffers from chronic nasal obstruction. The palatal vault is high and the arch tapering. The most consistent diagnostic sign is hypertrophy of the inferior conchae and their contact with the septum, which is deflected; this is visible on anteroposterior roentgenograms where the central rays are directed parallel to the floor of the nasal fossae.

Bands are made on the first bicuspids and the first molars. An impression is taken with composition, with the bands in position. The bands are replaced in the impression and a model is cast. Tags made of 0.030-inch soft wire are soldered to each band to insure firm attachment to the acrylic resin in which the appliance is processed. As the height of the palatal vault usually is reduced by this treatment, allowance for this should be made when the acrylic resin is trimmed. The appliance is polished on both surfaces and cemented into the mouth in the usual manner.

Expansion is carried out daily. The screw is adjusted until the patient experiences pressure but not pain. Usually, this amounts to a screw adjustment of 180 to 240 degrees. After the first week, considerably less resistance is experienced and more pressure can be applied daily. On the fourteenth day a diastema varying from 2 to 5 mm. usually is present between the central incisors; in the apical region slight tenderness to pressure is experienced on palpation. The amount of expansion required varies from patient to patient, but usually is obtained within two to three weeks. Provision for a slight relapse, which usually follows, should be made by overexpanding.

Although some Continental authorities advise that this appliance should be left in position for as long as a year, the author has found that it is impossible to maintain good oral hygiene for such a period. The appliance should be retained for from three to four weeks, by which time considerable consolidation will have taken place. The diastema created between the central incisors closes spontaneously. The fixed appliance now is replaced by a removable appliance in order to complete the retention period of at least six months. The removable appliance also can be utilized for minor tooth movements. By this treatment it has been found that permanent expansion



Above left: Prior to treatment, this 13 year old girl had a severe compression and crowding of the maxilla resulting in a bilateral cross-bite. Above right: The appliance cemented in place. Below right: Note the diastema between the central incisors after 14 days of rapid expansion. Below left: After completion of treatment

in the first molar region of from 2 to 7 mm. can be produced, and slightly greater expansion in the bicuspid region.

Only recently have orthodontists realized that permanent expansion is possible only within the normal limits of growth and development. Treatment is limited by the size and shape of the basal bone, beyond which no permanent expansion is possible. The splitting of the median palatal suture provides an important adjunct to orthodontic therapy. Recently it has been demonstrated that new bone forms in the midpalatal suture. The secret of success lies in the careful selection of patients. Most patients orthodontically indicated for this treatment suffer from chronic nasal obstruction. Thus, two conditions can be corrected with one treatment.

The main problem in the treatment is the difficulty which the patient experiences in keeping his mouth clean. Constant check has to be kept by the operator; food impactions between the acrylic plate and the soft tissue must be dislodged and removed. An atomizer is most useful for this purpose.

No other detrimental effects from this treatment have been observed.

University of Pretoria, Pretoria, Union of South Africa

Uses of bovine bone in reconstructive surgery

N. Georgiade, R. Woolf, F. Richard and K. Pickrell. *Plast.& Reconstr.Surg.* 24:13-18 July 1959

Reconstructive surgery of bony defects about the face necessitates in most instances the use of some firm substance for permanent recontouring. An autogenous bone graft usually is the material of choice. Many foreign substances have been tried and eventually have failed. Any substitute for an autogenous bone graft must have several qualities, including minimal local side effects, evidence of permanency, ease of utilization and availability.

Several encouraging reports have appeared regarding the use of bovine cartilage as a supporting structure in reconstructive surgery. The possibility of using this material in general reconstructive procedures about the face was judged worthy of further investigation.

Initially, bony defects of varying sizes were created in the mandibles of dogs and filled with autogenous bone or bovine bone paste (supplied in 3 Gm., sterile, disposable plastic syringes). Serial histologic sections showed rapid new bone formation with both materials.

A group of patients with cystic regions of the mandible or maxilla then was selected. After the cysts had been removed, the bony defects were filled with bovine bone paste. Postoperative roentgenograms revealed rapid bony consolidation in the cystic cavities. There were varying degrees of edema and fluid formation at the operative site. Cultures were uniformly sterile, and the reactions gradually subsided within four to seven days. Other bony defects, including mandibular fracture sites and alveolar cleft defects, were packed with bovine bone paste. Successful filling of these defects was obtained, but again localized reactions frequently occurred, necessitating aspiration of fluid. Satisfactory healing after aspiration was obtained in all patients.

A series of patients needing some type of solid bony support then was included. Bovine rib or mandible was used as grafting material. All implants were rinsed with saline solution and, if the patient was not sensitive to penicillin, were soaked in a penicillin solution (1,000,000 units) prior to insertion. Uniformly successful results were obtained in this group of patients with no localized tissue reaction being noted. A large mandibular defect was bridged successfully with a solid piece of bovine bone 4 cm. long. Roentgenograms obtained five months postoperatively showed the graft in place with apparent solid clinical union between the bovine bone graft and the adjacent bone.

Further studies should be made and a larger series obtained before recommending the general use of this material in reconstructive surgery; however, the initial findings are encouraging.

Duke University Medical Center, Durham, N.C.

Color coding of surgical instruments

Alfred F. Domaleski. *Modern Med.* 27:49-52 Feb. 15, 1959

No effective measure has been suggested to assist members of the operating team in the rapid, accurate identification of instruments. One fairly obvious method of identification is color coding. The problem of securing the proper coloring agent has been insurmountable until recently. Paints and enamels were tried, but none could resist the effects of autoclaving, chemical disinfectants, and so forth. Within the past few years, however, tough, resilient, colored plastics that are impervious to heat and chemical exposure have been developed.

To test the practicability of color coding instruments by means of plastics, a quantity of instruments was obtained from a large manufacturer. An effort was made to select colors that would be significant because of the relationship with the instrument to which they were applied. Thus, the Kellys were colored green, the Allis were colored blue, the hemostats red, and the

Ochsners were colored brown because the name sounds like the color ocher.

A series of tests demonstrated that the colors retained their vividness despite heat and chemical attacks.

The final test was the use of the instruments during an operation. The impact of the colors under the lights of the operating room was emphatic. The instruments appeared as a colorful palette, with the identity of each instrument immediately clear.

With color-coded instruments, each layer of tissue to be sutured can be marked with an appropriate row of instruments. The surgeon works under less strain because he knows instantly the portion of anatomy to which each instrument is attached.

The most effective use of color-coded instruments might be in the event of an atomic attack, when the demand for surgical personnel would be overwhelming. With color-coded instruments, any layman could help a surgeon. Color-coded instruments also would be an aid in television teaching. This means of instrument identification is inexpensive and practical. Its adoption would save time, training, money and, perhaps, lives.

Coudersport, Pa.

Some observations on the cause and treatment of hare-lip and cleft palate, based on the treatment of 1,041 patients

Michael C. Oldfield. *Brit.J.Surg.* 46:311-321 Jan. 1959

Cleft lip or cleft palate occurs in about 1 in 600 newborn children. Boys are affected more often than girls, by a ratio of about 3:2. In the series of 1,041 patients treated by the author, cleft lip alone was present in 233 patients (22.4 per cent), cleft palate alone in 358 patients (34.4 per cent), and cleft lip and cleft palate combined in 450 patients (43.2 per cent). Other congenital abnormalities were associated with clefts in 92 patients (9 per cent).

In the present series, 139 boys and 94 girls had cleft lip alone, for a ratio of 60:40. There were 313 boys and 137 girls with combined cleft lip and cleft palate, for a ratio of 70:30. But the sex ratio for cleft palate alone seems almost exactly reversed; 144 boys and 214 girls had cleft palate alone, for a ratio of 40:60.

Partial clefts of the hard and soft palate, without cleft lip, are much more common in girls and represent a condition which is genetically distinct from the other types of cleft. These clefts are inherited through a different gene and, when familial, occur in families free from other clefts. The shape of partial cleft palate also is different; in this type there exists a deficiency of soft tissue in the anterior region, whereas in the complete cleft palate there occurs just a separation. In the partial type, the anterior cleft is U-shaped, whereas in the complete type the cleft is V-shaped and narrows to a point.

The cause of cleft lip and cleft palate is not known, but various factors have been demonstrated as having an important bearing on cleft development. Two factors of proven significance have been established: (1) inheritance and (2) unfavorable maternal environment during the critical period of the first 12 weeks of gestation until the palate of the embryo has fused.

A family history of clefts was revealed in 12.5 per cent of the 1,041 patients. The mother's side of the family was affected nearly twice as often as the father's, but paternal predominance may occur.

Adverse maternal factors which may produce an unfavorable environment which could prevent proper fusion of the palatal segments in the embryo include: malnutrition; a diet excessive or deficient in vitamin A; cortisone or insulin therapy prior to pregnancy or birth; presence of rubella or other virus infections such as mumps; toxemia of pregnancy; pernicious vomiting; exposure to radiation; rhesus sensitization, and an excess or deficiency of desoxyribose nucleic acid.

Cleft lip should be repaired surgically only when the baby is thriving and weighs at least 12 pounds. In cleft palate, the principal aim in treatment is to provide an adequate speech mechanism which is ready to function at the time when the child first learns to talk. Palate repair therefore should be complete before the child is two years old. The risk to life, however, should be the prime consideration, but this consideration is sometimes ignored. Results of palatal repair in children less than one year old reveal a forbidding mortality of 10 per cent or over. In the children who are

operated on between the ages of 18 months and two years, mortality is below 1 per cent.

In the future, efforts should be made not only to improve treatment but to prevent the development of cleft lip and cleft palate. The time has come when extensive research is required to investigate the causes of congenital deformities so that their incidence can be reduced. It is not enough to wait and treat cleft lip and cleft palate after they have occurred.

John Wright & Sons, Ltd., Bristol, England

Current trends in antibiotics in oral surgery

Charles C. Alling and Edwin J. Pulaski.
Oral Surg.,Oral Med.& Oral Path.
12:743-759 June 1959

The greatest use of antibiotics at present is in the discriminate prevention of infections. In the routine extraction of teeth and in the most minor oral surgical operations, such as root resections, surgery for immediate dentures, biopsies, and the excision of small cysts and tumors, there is no need for antibiotic treatment in patients with otherwise healthy mouths. There are conditions, however, in which the use of these drugs has become indispensable and has revolutionized treatment. Surgical correction of chronic and acute infections is performed with safety while the use of systemic antibiosis protects against a spread of the infection. Extraoral and even intraoral mandibular and maxillary resections and bone grafts are managed successfully with the aid of protection supplied by antibiotics.

In some patients, a bacterial shower of the blood stream after oral surgery is dangerous. Normally, these bacteria are killed rapidly by the reticuloendothelial cells, but in a patient with fibrinous vegetations on the heart valves there is always a danger that microorganisms will become implanted on the heart valves, thereby causing an infective endocarditis. Whenever a dental operation, including dental prophylaxis, restorative dentistry, exodontia or oral surgery, is to be performed on a patient with cardiovascular disease or on a patient who has had rheumatic fever in early life, antibiotics should be given preoperatively and postoperatively.

If antibiotic therapy is indicated, it should be undertaken vigorously to avoid a therapeutic failure. Possible causes of failure of antibiotics to correct or prevent an infection include the following: (1) the use of antibiotics as substitutes for surgery, particularly as substitutes for incision and drainage; (2) lack of sensitivity of the causative microorganism to the antibiotic employed; (3) presence of emerging strains of bacteria resistant to the antibiotic; (4) alteration of the bacterial flora during treatment; (5) inaccessibility of the lesion so that the therapeutic agent cannot reach it; (6) inadequate dosage; (7) premature withdrawal of antibiotics; (8) failure to supplement antibiotic therapy with general supportive care, and (9) a nonbacterial cause for the lesion.

Antibiotics are administered liberally to patients by practitioners of all the healing arts, and are self-administered from proprietary sources. Antibiotics are relatively safe drugs.

Severe, life-threatening reactions, however, may follow the use of antibiotics. The potential benefit to the patient must be weighed against the risk to which he will be subjected.

Antibiotics have not modified sound surgical principles. Because of the emerging resistant strains of bacteria, this era of antibiosis calls for a reinforcing of sound surgical practices.

Antibiotics have allowed a greater latitude in the surgical procedures that may be performed, and have greatly reduced morbidity after surgery.

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An evaluation of radical 'in-continuity' resection in cancer of the head and neck

G. David King. *Surg.Clin.N.Am.*
39:655-659 June 1959

The term "in-continuity" refers to resection of a primary malignant lesion together with all homolateral and, in some instances, contralateral cervical lymph nodes, all soft tissue between the nodes and the primary lesion and, if necessary, bone and skin.

A group of 55 patients with cancer of the head and neck was treated consecutively at the Lahey Clinic from 1949 to 1953, either by radical incontinuity resection or by a "discontinuous"

series of operations. All patients have had follow-up studies for five years or until death. Of 61 operations performed on the 55 patients, 33 consisted of radical in-continuity resections; there were four deaths (mortality rate of 12 per cent). In 16 instances, the disease was controlled, and in 17 instances there was a recurrence of disease, or operative death. As the result of 28 discontinuous operations, the disease was controlled in 15 instances, and there was a recurrence of disease, or operative death, in 13 instances. The sites of malignant disease were the lip, mouth (except tongue), tongue, larynx, and miscellaneous.

Radical in-continuity resection proved superior to discontinuous surgical procedures in dealing with carcinoma of the floor of the mouth and of the larynx. The benefits of the former technic in patients with tongue carcinoma are more questionable. A substantial morbidity and mortality are associated with the in-continuity procedure, and it should not be employed as a routine measure.

Lahey Clinic, 605 Commonwealth Avenue, Boston, Mass.

Surgical interventions in hemophilic patients

P. Cazal, P. Izarn and G. Paleirac.
Anaesthesist,Berlin 8:129-134 May 1959

In hemophilic patients, surgical interventions, including tooth extractions and sutures of surface wounds, should be avoided, being performed only as a last resort.

If a surgical intervention becomes necessary in a hemophilic patient, whether the operation is as simple as a tooth extraction or as complicated as the control of an accidental hemorrhage or removal of a hematoma, the operative and postoperative hazards are greatly increased. Modern surgery, however, has means available to counteract the dangers.

Blood coagulation in a hemophilic patient can be normalized by the injection of a specially prepared dry plasma. The time between the venipuncture and the lyophilization should not exceed eight hours. The injection of an adequate amount of the plasma, (on the average, 20 ml. per kilogram of body weight) and repeated tests to determine the coagulation promoted, as well as the coagulation time, are most important.

The effect of this plasma infusion lasts for 24 hours only in hemophilia type I, and somewhat longer in hemophilia type II. Postoperative plasma injections, therefore, must be given daily as long as there exists a risk of hemorrhage; that is, at least for 15 days after the surgical intervention.

The antihemophilic plasma, concentrated from animal blood, has been given to several patients with hemophilia undergoing tooth extraction or other minor surgery. In no patient did abnormal bleeding occur while the plasma level remained at 30 per cent of normal, but in different hemophilic patients there was a great variation in the doses required to maintain that level. In instances of clean extraction wounds the temporary raising of the plasma level by one or two additional injections usually accelerated complete healing without hemorrhage. In instances of extremely large or infected wounds, however, hemorrhage occurred and recurred when the antihemophilic plasma level fell below the 30 per cent of normal. In all instances, plasma treatment produced rapid healing.

An important part of the treatment consisted of the immobilization of the wound areas, and the avoidance of all procedures which could cause trauma before the hemostatic level of the plasma has been obtained. Postoperative trauma may be caused by factors other than hemophilia.

A major objective for future work on the treatment of hemophilic patients must be the production of a highly potent, nonantigenic, antihemophilic plasma from the crude antihemophilic globulin now obtained from animal blood. Such a plasma probably is attainable from human antihemophilic globulin, but the inevitable limitation of supply of adequate quantities of human blood makes necessary a continued search for a substitute which should be active without causing sensitization.

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Plantation

Evaluation of the results of tooth replantation

I. Bielas, M. Fuchs, B. Horbal and Z. Pankiewicz. *Schweiz.Mschr.Zahnhk.* 69:497-509 June 1959

An experimental series in which 1,030 extracted teeth were replanted has been carried out at the Dental School of the Medical Academy of Lódź, Poland.

In 87 instances, the replantation was not completed because the teeth proved to have been damaged (broken crowns) during the extraction. During a period of six years, the remaining 943 replanted teeth were studied in 1,775 follow-up examinations. Tooth replantation succeeded in 97.9 per cent.

The method consisted of replanting apically infected teeth after endodontic treatment. In all instances, the apical region of the aveoli had been surgically freed of granulation tissue. The teeth were replanted in their own sockets without use of splints or other attachments.

The success obtained is favorable compared with that achieved by using other methods such as apicoectomy, pulpectomy or pulpotomy previously used to save the teeth.

The disadvantage of tooth replantation is the gradual increase of failures as postoperative time advances. The follow-up examinations revealed that a yearly increase of 10 failures occurred; about 41 per cent proved to be failures after a period of five years.

In dental practice, tooth replantation should be limited to instances in which the involved teeth cannot be saved by customary methods or where prosthetic procedures do not promise more favorable results.

The number of failures—after a period of six years—could have been reduced if the proper indications for tooth replantation had been more carefully evaluated. In this experimental series, such an exact evaluation was purposely avoided. The only contraindications considered were as follows: (1) periodontal disease, and (2) progressive granulation in the tooth neck region.

Although replantation of teeth generally is considered to be only a temporary measure, the preservation of involved teeth in a comparatively healthy condition for even a few more years is a valuable service to the patient to whom the physiological and psychological impacts of tooth loss may mean the difference between success and failure in his social or professional life. The functional period of replanted teeth is often longer than previously anticipated.

Dental School, Medical Academy, Lódz, Poland

Fractures

The present-day methods of treating fractures of the lower jaw

M. V. Muhin. *Vestn.Khir.* 83:7:53-62 July 1959

A wider choice of operative methods for treating mandibular fractures is now available, thanks to different metal appliances, wire of tantalum or vanadium, and the advent of antibiotics.

Since 1954 the stomatologic clinic of the Military Medical Academy has treated 176 patients with fractured mandibles; 65 were treated with metal inlay nailing; 65 by bone suture with tantalum wire; 25 with Kirschner wire. Extraoral appliances were used in six patients, and various complex methods for treating mutiple jaw fractures were used in 15 patients.

The bone suture provides the simplest method. Bone sutures are used for mandibular fractures without bony defects at the neck of the condyloid process, at the angle of the lower jaw, and in children. Osteosynthesis by a nail or wire may be used for fractures in the mental region, and the body and the angle of the lower jaw. In fractures with defects of the mandible, the fragments can be fastened together only with extraoral appliances.

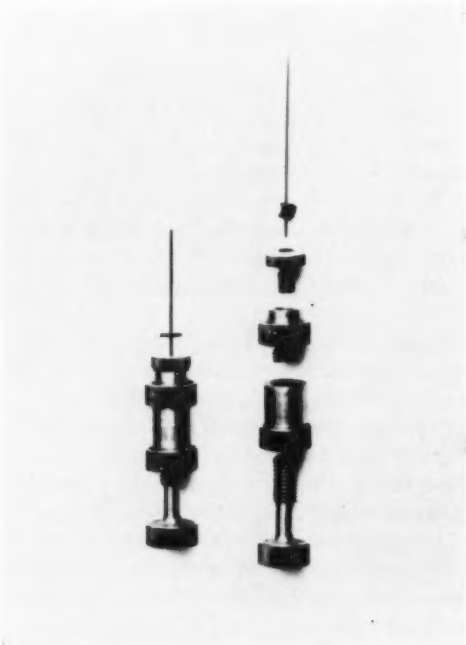
Medghis, Petrovka 12, Moscow, U.S.S.R.

Endodontics

Modified syringe for root filling

I. A. Morgan. *Brit.D.J.* 107:71
Aug. 4 and 18, 1959

A root-filling instrument (see illustration) which can be used effectively to fill root canals with antiseptic paste has been devised by the author. The barrel consists of an open-ended cylinder of stainless steel, threaded internally. The needle is soldered to a head which screws into the cylinder. Virtually all of the contents of the barrel can be extruded from the needle.



Left: Instrument loaded with paste and small square of rubber on needle to indicate length from apex to tip of tooth. Right: Instrument dismantled

The instrument permits rapid and complete filling of root canals with any form of smooth paste. The root canal can be filled without any paste reaching the crown region where it might stain the crown or fillings. If it is desirable to force a resorbable medicament through the apex of the tooth, this can be achieved by careful pressure.

If a root canal is filled completely with a permanent antiseptic paste, the additional insertion of gutta-percha or silver points appears to be superfluous.

This instrument should not be used with cements or any material which sets rapidly, as it probably would be difficult to remove the excess material left in the syringe before it sets.

The syringe can be dismantled completely for cleaning after use, and should be sterilized by boiling. Petrolatum forced through the barrel will help to clean out any remaining paste. A finer needle can be used when desired, but then the paste must have a correspondingly fine consistency. The instrument has been made available to the profession under the trade name of "Evamor."

5 Norton, Tenby, England

Treatment of deciduous teeth with exposed but healthy pulps

E. Rozkovcová and J. Kominek. *Československ.stomat.* 59:30-35 Jan. 1959

Direct pulp capping of teeth with an exposed but healthy pulp by using a biologic wound dressing under aseptic conditions has resulted in keeping the pulp in deciduous teeth alive in from 85 to 90 per cent of instances.

If pulpotomy is indicated because of the presence of deep carious cavities or fractures of the

crown, the tissues surrounding the involved tooth are anesthetized and the tooth isolated with a rubber dam. Carious enamel and dentin are removed and the prepared cavity is sterilized. The root canal is widened below the neck of the tooth, and the coronal portion of the pulp is severed and lifted. The remaining portion of the pulp is covered with zinc oxide-eugenol, and the cavity is sealed with phosphate cement. The final filling can be inserted after one week.

The results obtained by pulpotomy are more favorable than those of routine treatment of inflamed pulps.

During 1958, 62 children with exposed but healthy pulps in deciduous teeth were treated at the Second Stomatological Clinic of the University of Prague, Czechoslovakia. Although no method of pulp and root canal treatment can achieve success in 100 per cent of the patients, in this series 74 per cent could be judged as successful because in those instances a vital and healthy pulp remained protected by a newly formed layer of dentin, keeping the periapical tissues in a healthy condition, thereby preventing postoperative infection.

Every method which enables the dentist to keep an exposed but healthy pulp in the deciduous teeth vital is preferable to the best root canal filling technics.

Second Stomatological Clinic, University of Prague, Czechoslovakia

Treatment of coronal fractures

Zahnärztl.Praxis 10:76 March 15, 1959

Q.—Two patients, 19 and 21 year old boys, sustained coronal fractures of all upper anterior teeth in traffic accidents. There was no pulp exposure and no pain. Immediate stabilization was obtained by splinting and the vitality of the pulp was preserved by capping with celluloid. How long must the fractured teeth be kept under observation before permanent restoration (veneer crowns) can be attempted?

A.—After the biologic immobilization of the adequately capped teeth, an observation period of at least three months is necessary to assure the re-establishment of normal conditions in the pulp and the investing tissues. If there is no pulp exposure, the condition and vitality of the pulp should be determined. Accidental coronal fractures usually produce inflammation of the periodontal membrane. If this occurs, it may be necessary to relieve occlusal or lingual stress by grinding to obtain relief from pressure. The exposed dentin should be protected by a temporary covering until secondary dentin is formed. Gold or acrylic veneer crowns may be placed on the teeth if during the observation period no harmful changes have taken place. Roentgenographic control and vitality tests should be continued for 12 months. If the pulp is close to the exposed dentin surface, bacteria may gain access to the pulp before the pulp tissue can protect itself by the formation of secondary dentin. Pulpitis may develop causing necrosis. In these instances, the fractured teeth have to be treated as though the pulp had been exposed.

(13b) München-Gräfelfing, Germany

Gutta-percha

Österr.Zschr.Stomat. 56:46 Jan.-Feb. 1959

Q.—What is the origin of the term "gutta-percha," what is its meaning, and how is the word pronounced correctly?

A.—Gutta-percha (pronounced gŭta pûrcha) is derived from two Malayan words, *getah,* meaning gum, and *perca,* designating the tree *Palaquium gutta* of the family *Sapotaceae.* It designates the latex or milky fluid which is secreted in cylindric cells of the tree's cortex. The latex flows slowly where an incision is made through the bark. Harvest of the latex usually is carried out during the wet season. Ancient Chinese and Malayans were acquainted with the characteristic property of gutta-percha of softening in warm water and of regaining hardness after cooling. Besides its use in dentistry (endodontic treatment), gutta-percha is employed in fabrication of golf balls, electric insulation, cable covering and chewing gum. Because of its comparatively high cost, gutta-percha gradually is being replaced by recently developed synthetic materials such as polyethylene, vinyl resins and Nylon.

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The bacteriology and pathology of the pulpless tooth

J. A. Cran. *Austral.D.J.* 4:241-245 Aug. 1959

The nonvital pulp presents one of the most serious problems in dental practice. Most methods of treatment are empirical. A tooth with a nonvital pulp is a bacteriological problem; if the tooth did not harbor bacteria, it would not be a problem.

Bacteria isolated from root canals fall into two groups: (1) streptococci, staphylococci, gram-negative bacilli and yeasts, and (2) gram-positive bacilli, *Gaffkya tetragena* and diphtheroids.

The streptococci probably are the most important to the dentist; they are the most prevalent, and the most difficult to eliminate. Alpha hemolytic streptococci may produce metastatic infections of the heart valves. Preoperative antibiotic therapy should be instituted in certain patients. All mechanical treatment should be confined to the root canal, so that dead tissue and bacteria are not carried beyond the apex. When dead tissue and bacteria are forced beyond the apex, the finely balanced equilibrium between the infecting microorganism and the host may be upset, causing serious complications.

Every effort should be made to remove bacteria from the root canal while preserving this equilibrium or even swinging the balance in favor of the host. This calls for careful, thorough debridement and irrigation.

Staphylococci are becoming an increasingly serious problem, and their incidence is high in root canals. *Staph. pyogenes* var. *aureus* is mainly responsible for severe, localized, acute infections, the type so commonly encountered with teeth with nonvital pulps.

Gram-negative bacteria have a low incidence in root canals; when present, however, they are difficult to eliminate.

G. tetragena, in pairs and tetrads, is fairly prevalent in root canals. Although highly pathogenic to mice, the pathogenicity of *G. tetragena* to humans is uncertain. It could be associated with subacute infections in the periapical regions, as it has been isolated in mixed cultures from these regions.

Some of the nonpathogenic bacteria produce foul odors as the result of the breakdown of amino acids to ammonia, amines and hydrogen sulfide; their presence is characterized by a moist, gangrenous mass of pulp difficult to clear from the canal.

Yeasts occur fairly frequently in root canals, especially when antibiotics are being used.

The root canal, with its hard and, in most instances, impenetrable walls, gives protection to the bacteria from the inflammatory and antibody defense mechanisms of the body. It is only when toxins or bacteria leave the root canal that these mechanisms come into action. The importance of sealing the apical portion of a root canal with a nonirritant, insoluble material is obvious. At the points of exit of toxins and bacteria, a connective tissue reaction known as the granuloma occurs.

Acute suppuration with involvement of the overlying soft tissue and osteomyelitis are caused most frequently by *Staph. pyogenes* var. *aureus.* Extensive involvement with cellulitis of the tissues of the face and the fascial spaces usually is caused by the beta hemolytic streptococcus; also it can be caused by *Staph. pyogenes* var. *aureus* and possibly even by *Candida albicans.* These conditions will undergo resolution if the source of infection is removed, and in most instances this will occur. In some instances, however, the tooth must be extracted.

In treatment of a tooth with a nonvital pulp, the following course seems necessary:

1. Small periapical regions should be kept under observation for about two years, with a roentgenographic check each six months. If the condition is still present at the end of two years, apicoectomy should be performed.

2. Larger regions should be treated by apicoectomy. If conditions are unfavorable for retention of the tooth, the tooth should be extracted and curettage performed.

Just as the environment determines the balance of the bacterial flora on the mucous membrane, so it does in the root canal. Removal of food particles by treatment, and complete sealing of the canal, make the environment of the root canal unfavorable for bacterial growth. The success of root canal therapy will depend on the thoroughness of these procedures.

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Extractions

Rheumatic fever following mass exodontia

F. J. Evans and J. V. P. Chatwin.
J.Canad.D.A. 25:427:432 July 1959

A 19 year old Canadian soldier reported to the dental clinic with rampant caries, and mass exodontia was indicated. Preoperative examinations revealed normal heart sounds and no infections. His teeth, with the exception of the maxillary third molars, were extracted under general anesthesia and he was discharged from the hospital on the fifth postoperative day, after a normal recovery. On the evening of the same day he noted the onset of a mild sore throat. During the next week he became aware of gradually increasing fatigability and on the 12th postoperative day he was readmitted to the hospital with fatigue, fever and a painful right knee. Treatment consisted of strict bed rest, a high caloric diet, procaine penicillin 600,000 units intramuscularly twice daily, and salicylates up to 1 Gm. per pound of body weight daily.

His fever gradually subsided, as did his joint symptoms. On the fourth day after admission, he developed a Grade II systolic apical (mitral) murmur, which persisted throughout the acute phase of the illness and throughout the convalescent period. He was discharged to convalescent leave on the 31st hospital day. The final diagnosis was acute rheumatic fever. The mitral systolic murmur was still present four months after onset, on his discharge from military service.

This patient apparently suffered his initial attack of acute rheumatic fever with arthritic and myocardial manifestations of the disease after multiple extractions of his teeth. A greater possibility for invasion by Group A streptococci exists after mass extractions. Adequate treatment of acute hemolytic streptococcal infections with penicillin eradicates the infectious agent from the oropharyngeal tissues, lessens the magnitude of the antibody response, and prevents the development of rheumatic fever.

It is suggested that "umbrella antibiotic therapy" be initiated for full mouth extractions in adolescents with neglected mouths such as this patient had.

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An improved method of constructing a splint for the control of haemorrhage

J. W. Gilbert and H. M. Oldfield.
D.Practitioner 9:246-247 June 1959

Rarely are splints required to control postextraction hemorrhage, but when they are, they must be produced with the utmost speed.

A technic for constructing a rigid splint in about 90 minutes involves the direct adaptation of wax in the patient's mouth. Alminax is the material of choice because it is less adherent to the teeth than pink wax, and is less liable to distortion at mouth temperature.

A piece of Alminax is cut to the outline of a lower baseplate, softened in a warm water bath, and placed in the mouth. It is adapted to the occlusal surfaces of the teeth with finger pressure. The wax, while held in contact with the teeth, is adapted to the lingual or palatal mucosa and over the site of bleeding. The patient is directed to close lightly on the wax until even contact is reached. The wax is chilled as much as possible with an airjet, and removed from the mouth. The excess wax is trimmed off with scissors and the remainder is chilled in cold water. To obtain the pressure required, more wax is applied to the region opposite the bleeding site before the wax splint is replaced in the mouth and readapted to the tissues. The wax splint is removed carefully, placed in cold water, and given to the technician.

The technician will have assembled the following materials and equipment: detergent solution, acrylic mixing jar, clear acrylic powder and liquid, plaster spatula, plaster of paris accelerating solution, petrolatum, curing bath with a temperature of 70° C., boiling water and tin foil substitute.

The Alminax splint is immersed in the detergent solution for about one minute; while this is

being done, the acrylic resin is mixed, in a liquid: powder ratio of 1:2.5. The splint is rinsed under running water, and embedded in one half of the flask; a quick setting plaster is used and the occluding surface is left exposed. As soon as the plaster is stiff, petrolatum is applied as a separating medium. A second mix of plaster is prepared, and the flasking is completed.

The flask is immediately placed in the prepared curing bath for five minutes. Then it is opened and the wax boiled out. The mold is dried with compressed air and immediately painted with the tin foil substitute. By this time, the acrylic resin should have reached a soft, doughlike consistency, and it is packed into the warm mold. The flask is closed with a spring clamp and placed in the prepared curing bath. The temperature is held at 70° C. for 30 minutes, and then brought to the boil; after 15 minutes of boiling, the flask is removed from the bath and cooled under running water for 10 minutes. The splint is deflasked, trimmed, and polished ready for the mouth.

The acrylic splint now should fit with a minimum of adjustment. Two strips of black gutta-percha are warmed and used to line the splint which then is settled in the mouth. The patient is instructed to bite firmly. The gutta-percha compresses the bleeding area and flows into tooth and tissue undercuts, thereby providing added retention. A bandage is used to support the mandible firmly. The splint should be worn for 12 to 18 hours before it is removed.

Although the aforementioned technic conflicts with all concepts of correct manipulation of acrylic resin, it produces a clear, rigid acrylic splint. Although the splint has a comparatively short life, it has the advantages of speed of production, a saving of time in being fitted to the mouth, and provides greater comfort for the patient. The method described should be used only when there is no previous history of bleeding; if there is a history of bleeding, a splint should be constructed prior to the extraction of the tooth.

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The reattachment of mucoperiosteal flaps in surgical extraction wounds in macacus rhesus monkeys

H. E. Simpson. *Austral.D.J.* 4:86-89 April 1959

To observe the effects of flap reflection on the underlying bone and to study the healing process, 37 surgical extraction wounds in *Macaca rhesus* monkeys were examined histologically. The materials consisted of specimens obtained from three days to eight weeks after operation. The following observations were made:

1. Flap reflection is followed by superficial resorption of the underlying bone but this process is modified where the soft tissues are not completely stripped from the bone.

2. Reattachment of the flap occurs in two phases. During the first week, capillaries and fibroblasts grow out of foramens and, through the agency of the organizing exudate between flap and bone, anchor the flap in position. During the second week, the new connective tissue between the flap and the bone becomes attached to new bone forming on resorbed areas of the alveolar process.

3. Bone fragments avulsed with the flap or falling between the flap and the bone during surgical procedures usually are well tolerated, but if they are near the surface of the wound they may give rise to an inflammatory reaction, probably because they become infected. Healthy bone fragments often act as centers of ossification. In some instances new bone forms on the surface of the alveolar process.

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Case reports

Oxyphilic granular cell adenoma of the parotid gland

John B. Codington. *Am.J.Surg.* 97:333-335 March 1959

To date, 19 instances of benign oxyphilic granular cell adenoma and 10 instances of the malignant form or oxyphilic granular cell carcinoma of the parotid gland have been reported. This tumor characteristically occurs in patients over 50 years old. The neoplasm usually is small, nontender, firm, slightly movable and of long duration. The tumor should be widely excised and the facial nerve should be preserved unless it is involved in the tumor mass. Biopsy of the cervical nodes should be performed if such nodes are present; if positive for malignancy, radical neck dissection should be performed.

A 72 year old woman complained of a nonhealing, painless lesion of the tip of her nose, and a nontender, firm mass in the region of the right parotid gland. The lesion of the nose had been present for six months. A biopsy revealed it to be basal cell carcinoma. The parotid tumor had been present for ten years with no change in size. The patient's only previous hospital admission had been for excision of a skin cancer of the face seven years prior to the present admission.

At operation, the parotid tumor was found to be embedded in the superficial lobe of the parotid gland. A small branch of the facial nerve passed over it. The neoplasm was ovoid and grayish in color; it measured 2.0 by 1.0 cm. and was entirely encapsulated. The tumor, with attached surrounding normal parotid gland tissue, was excised. The postoperative course was uneventful. No discernible facial nerve deficit resulted. Radiation therapy for the basal cell carcinoma of the nose was initiated. The patient was discharged from the hospital and has remained well to date.

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Cherubism: familial fibrous dysplasia of the jaws

Noel Thompson. *Brit.J.Plast.Surg.* 12:89-103 July 1959

In 1938, W. A. Jones, discussing familial fibrous dysplasia of the jaws, stated that "the full round cheeks and upward cast of the eyes give the children a peculiar grotesque, cherubic appearance," and proposed that the disorder be given the name "cherubism." Although few subsequent observers have noted the upturned eyes, the term proposed by Jones has persisted.

Two cases of cherubism in the same family, involving a boy and his maternal grandmother, are described. All previously reported cases are summarized.

In the five year old boy there was massive symmetrical enlargement of the maxilla and mandible, lending a pugnacious aspect to the face. The mandible was enlarged in all directions, and showed on its outer aspect multiple lobulations 1 to 4 cm. in diameter, smooth and ill defined, bony hard and not tender, and covered intraorally by normal mucosa. Smaller and more discrete lobulations were palpable through the overlying cheeks on the anterior surface of the maxilla. The alveoli of both jaws were considerably broadened and flattened, especially in the symphyseal region of the mandible where on the lingual aspect a bony platform projected backwards into the floor of the mouth at the level of the genial tubercles, for a distance of 2 cm. The maxilla, in addition to the alveolar expansion, showed an acutely vaulted, narrow, V-shaped hard palate. The teeth were tilted and in poor occlusion; anteriorly a gap of 1 cm. separated the incisal margins of the upper and lower incisors. No teeth were missing in the deciduous dentition and neither the size nor shape of the teeth was altered. The submandibular lymph nodes showed bilateral, firm, smooth, nontender, discrete, mobile enlargement of moderate degree.

Roentgenographic examination showed considerable expansion of the entire mandible, vertically and horizontally. Only the mandibular condyles were not involved. The coronoid processes were rudimentary and the mandibular notch almost abolished. The cortex, though irregularly

expanded and thinned, appeared intact. Some of the developing permanent teeth were considerably displaced. Calcification of the permanent teeth follicles appeared normally advanced, except there was no evidence of calcification of the second bicuspids and second molars. Roentgenograms of the chest disclosed peculiar cystlike changes in the anterior ends of all ribs on both sides.

Biopsy of the mandible showed that most of the section consisted of connective tissue composed of numerous spindle-shaped and uniformly stained cells, and intercellular collagen fibers distributed in interlacing bundles and whorls. Numbers of thin-walled and dilated capillaries were present.

Operative treatment was undertaken to improve the facial appearance. The mandible was reduced on its buccolabial aspect and its lower border, through intraoral incisions, in two stages. The cortex was sclerotic and substantial, requiring the use of chisel and osteotome; the subcortical tissue was vascular, of reddish color and rubbery consistence. A satisfactory reduction was obtained, but the mandible was inadvertently fractured and great difficulty was encountered in immobilizing the fragments. Roentgenographic examination taken two years later showed that the pathological process continued to progress. Intraoral roentgenograms showed that the second molars and second bicuspids still were not evident as calcified shadows.

The maternal grandmother had a similar condition, which had increased steadily throughout her school days but had become less noticeable after the age of 20 years. The condition steadily improved thereafter until middle age was attained.

Generally, the cherubic child is mentally normal, usually male (the proportion of male to female is five to three), and usually one to three years old at the time of sudden clinical onset of the condition. The jaw and face lesions are the only clinical abnormalities present. The progressive swelling of the lower face, with pronounced increase in fullness of cheeks and jaws, is common in almost all case reports, and is caused by enlargement and expansion of the underlying bony structures, the skin and subcutaneous tissues being normal. The lower facial swelling is caused partly by the bilateral chronic enlargement of the submandibular lymph nodes. Almost all reports stress that the deciduous teeth are irregular, misplaced, missing, or malformed, and become loose and are lost early. This applies especially to mandibular teeth; the upper teeth are little affected. Some permanent molars usually are absent. Functional disability is rare, because the swellings usually are painless and the jaw movements undisturbed.

The treatment of fibrous dysplasia of the jaw "demands surgical judgment rather than technical skill, and should be conservative" (Wass, 1952). Local curettage in childhood has brought good immediate results but some recurrence has been noted. Most authorities oppose surgical interference in childhood, unless severe respiratory embarrassment, speech impairment or emotional disturbance is present. Surgical intervention during the active phase of the disease is apt to be followed by rapid recurrence. Simple paring down of the overgrown bone by intraoral approach gives satisfactory results when done after all growth of the lesion has stopped. No inhibition of fibrous tissue formation occurred in a seven year old child after massive doses of adrenocorticotropic hormone. Roentgenotherapy is best avoided. The etiology of the disease has not been established. The familial incidence of cherubism is the greatest single barrier to explaining the disease as a fibrous dysplasia of bone.

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Angioreticuloendothelioma, a rare parotid tumor

M. Barbazza. *Arch.ital.mal.appar.diger.* 24:259-268 April 1959

Tumors of the parotid glands of mesenchymal origin are rare, and angioreticuloendotheliomas are seldom reported in the literature.

A ten year old girl was seen at the dental clinic of the University of Bologna, Italy, with swelling in the right parotid region. Examination revealed a grossly nodular, meaty, nontender mass, the size of a large walnut, in the body of the right parotid gland. The overlying mucosa was freely movable and the regional lymph nodes appeared to be normal to palpation.

A total parotidectomy was performed. The capsule of the parotid gland appeared intact. Sections of the tumor were examined histologically, and showed the absence of the characteristic glandular structure of the parotid gland. The glandular tissue had been completely replaced by reticular tissue and a vascular network formed by the capillaries which were lined with endothelial tissue. Hemorrhagic regions were frequent but malignant tissue changes were conspicuously absent. The tumor was diagnosed as an angioreticuloendothelioma of the parotid gland.

According to the few reports on this rare parotid tumor, such neoplasms occur only in infants during the first year of life. Growth is generally rapid, and the tumor may reach a considerable size. The great majority of the so-called "mixed" tumors are found in the parotid gland.

Mesenchymal tumors of the parotid gland such as angioreticuloendothelioma may originate from the vascular structures of the gland or from abnormally proliferated undifferentiated mesenchymal cells. Hemohistioblasts, the basic pluripotential mesenchymal cells, are capable, under neoplastic stimuli, of evolving into different types of mesenchymal tumors. This hypothesis, suggested by De Gaetani, explains the appearance of complex tumors in the parotid gland such as angioreticuloendothelioma.

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Oral manifestations of sarcoidosis: report of two cases

H. Doose and C. Berderli. *Mschr.Kinderhk.* 107:218-227 April 1959

Sarcoidosis (Boeck's sarcoid) is a chronic disease of unknown cause which involves various tissues, especially the facial skin, lymph nodes, salivary glands and sometimes the eyes, lungs and bones.

Sarcoidosis attacks persons of all ages but is most likely to be encountered in children. It is probably a common affection, and although the Scandinavian countries appear to be the cradle of the disease, cases have been reported from most other European countries, from Africa, South America, Japan and recently in increasing numbers from the United States. In North America the Negroes appear to be particularly susceptible, and in this race the disease is recognized at an earlier age than in the Caucasian race.

The characteristic features of the oral lesions which suggest sarcoidosis are their occurrence in bilateral groups, their persistence and slow extension, and their lack of ulceration. Swelling of the parotid gland, associated with peripheral facial paralysis caused by lesions of the facial nerve and resulting in a characteristic distortion of the face, involvement of the salivary and lacrimal glands, and lesions in the bones of the maxillofacial region and the extremities, offer evidence strongly suggestive of sarcoidosis.

Two children, a 9 year old girl and an 11 year old boy with the characteristic oral manifestations of sarcoidosis, were admitted to the Pediatric Clinic of the University of Kiel, Germany.

In both patients, the parotid glands were enlarged but free from pain. The mouth was extremely dry. Bilateral paralysis of the seventh cranial nerve was evident. Eruptions of the facial skin and the oral mucosa consisted of small, discrete, slightly elevated nodules varying in size from a few millimeters to 1 cm. in diameter, yellowish in color and waxy in appearance. Ulceration did not occur in any of the lesions but atrophic scars remained in the areas of the mouth where the lesions had subsided.

Microscopic examination of specimens taken from oral lesions revealed the presence of reticular fibrosis with numerous small granulomas of the epithelioid cells. This finding established the diagnosis of sarcoidosis.

Treatment consisted of three courses (130 mg., 300 mg., and 220 mg.) of desoxycorticosterone acetate (Decortin) and resulted in considerable improvement in the general condition.

After two weeks, both patients were discharged from the clinic but had to be readmitted after seven weeks. The pattern of events after cessation of desoxycorticosterone acetate therapy changed from prolonged remission to recurrence. Splenectomy was performed and resulted in an improved general condition and a rapid remission of the symptoms.

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Oncology

Carcinoma of the floor of the mouth: clinical observations and surgical treatment

William F. MacFee. *Ann.Surg.* 149:172-187 Feb. 1959

Carcinoma of the floor of the mouth, a relatively infrequent form of human cancer, is one of the more malignant forms of intraoral cancer. This disease may arise at any point along the arcuate area of mucous membrane which lies between the tongue and the mandible, but the most frequent site is in the anterior portion of the arc. Many lesions arise in or near the midline or cross the midline by extension. The primary lesion usually is seen as an ulcer with irregular margins which generally are raised. The base of the ulcer has a reddish-gray, indolentlike, granular surface which ordinarily is free of slough. The carcinomatous ulcer usually extends more rapidly in an anterior and posterior direction, along the mucosal fold, than in the transverse directions. When first seen, the area of induration and ulceration frequently extends a distance of 2 or 3 cm. along the floor of the mouth in a direction parallel to the mandible. The primary carcinoma may appear as a somewhat depressed fissurelike ulcer extending along the line of angulation of the mucosa. In another relatively common form of carcinoma it appears as a raised, fungating and ulcerating tumor. This type of lesion appears most often in the anterior or anterolateral floor of the mouth.

Carcinomas which start in the floor of the mouth gradually encroach on the mandible, become attached to it and eventually involve the bone; bone involvement usually is a late development. Medially, the tumor invades the musculature of the tongue and eventually may cross the midline and occupy the entire floor of the mouth. It is difficult to discuss carcinoma of the floor of the mouth and of the tongue as separate entities because of the frequent invasion of the tongue by tumors arising in the floor of the mouth, and vice versa.

Virtually all oral carcinomas including those of the floor of the mouth, are of the epidermoid or squamous cell variety, and metastasis to the regional lymph nodes is to be anticipated. Crossed metastasis, to the side of the neck opposite the primary lesion, occurs with disturbing frequency. Remote metastasis from intraoral cancer seldom presents a clinical problem, but does occur occasionally.

The early symptoms are negligible. The patient becomes aware of a little nodule or an insensitive hard "patch" under the tongue which causes no inconvenience and, too often, excites little or no curiosity on the part of the patient. The decision to seek medical advice usually is made because of gradual increase in the size of the nodule, the development of ulceration, or occasionally because of sharp pricking or stinging pain in the lesion. The advice the patient receives may or may not be what the condition requires. The physician may touch the ulcer with silver nitrate or other chemicals and instruct the patient to return in a few days or weeks for further observation. The extraction of teeth frequently is advised, and the true character of the disease may not be recognized until the opportunity for a cure is lost.

Late symptoms of the disease—such as incessant pain, salivary drooling, impairment of speech and difficulty in swallowing—are not so much symptoms of cancer as symptoms of death from cancer.

The treatment of carcinoma of the floor of the mouth during the past 50 years has gone through a succession of changes, from surgical operation to irradiation, and back to operation. The most effective treatment is surgical excision of the primary tumor and complete dissection of the lymph nodes on the corresponding side of the neck. If the cervical lymph nodes on the side of the primary tumor are involved, dissection of the nodes on the opposite side also is indicated. If the nodes on the side of the primary tumor are not involved, dissection of the nodes on the opposite side may be omitted, at least temporarily, but the patient should be kept under close observation for the possible occurrence of contralateral metastasis.

The prognosis depends entirely on whether the

primary carcinoma and its metastatic implants have been removed completely. About a third of the patients without metastasis survive and are free of recurrence for five years or more after surgical treatment; the five-year survival rate of those with metastasis is about a sixth or less.

Surgical extirpation of the carcinoma should not be more destructive of uninvolved tissues or more deforming than is necessary, and provisions should be made for restoring the patient as nearly as possible to his former appearance and functional state.

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Malignant disease of the head and neck in childhood

Harry W. Southwick, Danely P. Slaughter and James D. Majarakis. *A.M.A.Arch.Surg.* 78:678-687 May 1959

Although malignant disease in childhood is not a frequent cause of morbidity, it ranks second to accidents as the cause of mortality in the age group from 4 to 15 years old. With prompt institution of appropriate diagnostic and therapeutic measures, a favorable prognosis can be anticipated with such lesions, particularly with fibrosarcoma, neurofibrosarcoma and thyroid cancer.

The authors have reviewed 70 case reports of malignant disease of the head and neck in children, encountered from 1942 through 1957. Forty three patients had as their initial symptom a soft tissue mass in the neck not associated with intraoral pathologic changes.

Of the 48 patients with sarcomas, 27 were boys and 21 were girls.

Seven patients with lymphosarcomas were treated generally by irradiation and occasional chemotherapy. Four of the seven were alive and clinically free of disease 3, 6, 10 and 14 years after treatment, respectively.

Treatment was essentially the same for 12 patients with Hodgkin's disease. Three have survived a significant period of time without evidence of either local or systemic disease.

Fibrosarcomas were encountered in eight patients. This tumor is radioresistant and all but one of the patients received surgery. Six of the seven patients have survived free of disease for from three to seven and a half years after surgical extirpation of the tumor.

Of four patients with neurofibrosarcomas, three are alive without evidence of additional disease, three and a half to 14 years after surgery.

Of four patients with rhabdomyosarcomas, three were treated by irradiation and one by surgery. One of the irradiated patients survived two years; the other three were dead within six months.

Of four patients with neuroblastoma, three received roentgenotherapy, with minimal palliation, and all were dead in less than nine months. The fourth had an operable tumor; a left radical neck dissection was followed with roentgenotherapy to the left side of the neck. The patient has been well for eight years without evidence of disease.

Of three patients with angiosarcoma, one is alive with intracranial metastases in less than a year after surgical treatment; another is alive with no evidence of disease one year after treatment, and the third died within three months after the diagnosis was established.

One patient with a chondrosarcoma of the nose and one patient with a chordoma died after metastases occurred.

Of 22 patients with carcinoma, 10 were boys and 12 were girls. Of 14 patients with thyroid carcinoma, 10 had had previous external radiation to the head and neck region. All patients have survived, though two suffered a recurrence of the disease but are alive four and seven years, respectively, after establishment of the diagnosis.

Of four patients with lesions of the salivary glands, all were treated surgically and are well and without evidence of disease.

Of four patients with miscellaneous types of carcinomas, two died and two are well.

The most striking feature of the malignant disease process in children is the preponderance of sarcomas over tumors of epithelial origin. The misconception that malignant disease in childhood is almost universally fatal should be dispelled.

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Public health dentistry

Assessment of malocclusion in population groups

Lawrence E. Van Kirk, Jr., and Elliott H. Pennell. *Am.J.Pub.Health* 49:1157-1163 Sept. 1959

Preliminary work has been done in developing an examination method for assessing malocclusion in population groups. The method is based on the assumption that the primary purpose of an assessment of malocclusion is to provide data useful for group study, even though the index may not be sufficiently sensitive for selecting patients for treatment.

The procedure has been kept simple to assure its rapid applicability in field programs. It is designed to provide index values which quantify the level of malocclusion in individual mouths and also rank the build-up of problems in population groups. This would permit both a comparison between groups examined and an assessment of changes associated with preventive or corrective programs.

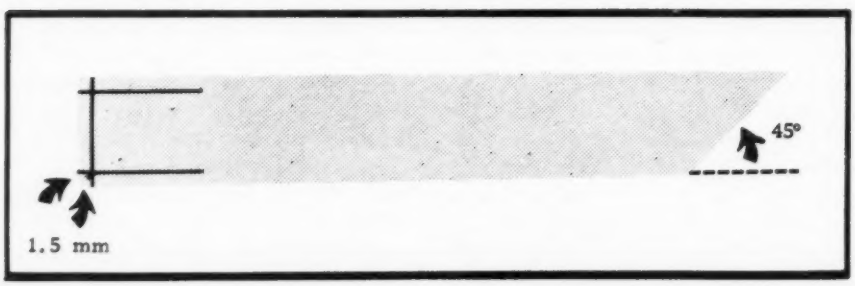
Neither a conventional dental chair nor an examination light is used, although an adequate fixed source of light is essential. Only a small plastic, gaugelike (Fig. 1) instrument is required in making the necessary measurements for assessment. Malalignment of teeth is measured, and scorings of individual tooth findings are summated for the anterior and the right and left posterior segments of each arch. A final malalignment index is obtained as the total of the six segment scores.

Segments are assessed in the following order: maxillary anterior, maxillary right posterior, maxillary left posterior, mandibular anterior, mandibular right posterior, and mandibular left posterior. Each tooth present in a segment is scored 0, 1 or 2 (Fig. 2). A score of 0 is for ideal alignment, with the tooth showing no apparent deviation from the ideal arch line. A score of 1 represents minor malalignment of two types, rotation and displacement. In the first, the angle formed by the line projected through the contact areas of observed tooth and the ideal arch line is less than 45 degrees. In displacement, both contact areas of the tooth are removed in the same direction from their position in ideal alignment but less than 1.5 mm. removed.

A score of 2 covers major malalignments caused by rotation and displacement. Major rotation is present when the angle formed by the line projected through the contact areas of the observed tooth and the ideal arch line is 45 degrees or larger. Major displacement occurs when both contact areas of the tooth are removed from their position in ideal alignment by 1.5 mm. or more.

The plastic instrument is superimposed over the teeth for the scoring measurements. Experience to date indicates that one minute or less is required for the entire procedure. The range of values may extend from 0 to 64 in mouths with 32 teeth present. However, few mouths score 0 or above 18.

Figure 1 Schematic drawing of clear plastic instrument used for measurement. The gaugelike tool measures 0.5 by 4 inches. It has a 45 degree angle cut at one end, and lines etched 1.5 mm. from the edges of the other end



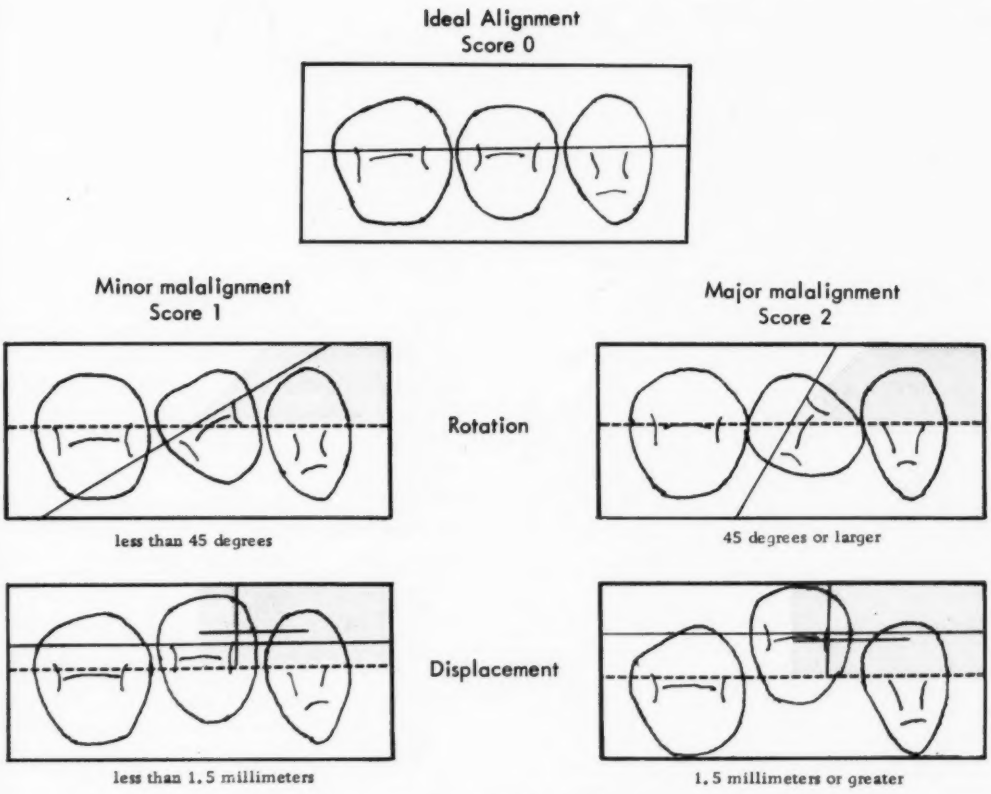


Figure 2 Schematic diagram of malalignment scoring procedure

The malalignment index was assessed in examination of 2,100 junior high school children from suburban areas adjacent to Washington, D. C. The average age was 13.9 years. The group was characterized by an average malalignment score of 7.5; the values scored ranged from 0 to 21; only five children were scored 0 and only seven were scored in excess of 18. The malalignment index has demonstrated a progressive increase in average scores from age 12 to age 15 years. The increase is three times as great in the posterior as in the anterior regions of the jaws. In the age groups studied, the largest contribution to the total score is made by the mandibular anterior segment, but as age increases the differences become progressively less apparent. Segment scores were similar for boys and girls.

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The toothbrush

R. Zuhrt. *Deut.Stomat.* 9:457-468 May 1959

The use of the toothbrush often has been considered as a symbol of civilization, although many authors have demonstrated that some of the "primitive" peoples in ancient as well as in the present time used and use the toothbrush or a similar device more frequently than does the average "civilized" man.

An ethnologic, geographic and historic study of the use and distribution of the toothbrush or its various substitutes or precursors was made at the Institute of Social Hygiene in Berlin-Lichtenberg, Germany.

The results and conclusions were as follows:

1. Nearly all native peoples and tribes of Africa, Asia and the West Indies used or use tooth-

brushlike devices to execute oral hygiene which in most instances was associated with religious ceremonials. Similar devices were known to most of the American Indian tribes.

2. In Africa, toothbrushes made from the roots and fibers of various trees are used by the Bantu, Zulu, Ovampo, Makua, Makonde, Wanyakyusa, Sudanese, Ethiopians, Nubians and Bedouins. These peoples call the brushes *msuaki, siwak* or *barrek,* whereas the Moslems call them *miswak.*

3. In Asia, similar toothbrushes, made from the fibers of *Rhododendron maximum* or *Acacia leucophloea,* are called *miswak* by the Hindu, *datuna* by the Chinese, and *koyoji* by the Japanese.

4. Whereas the toothbrush was described by Cornelius Solingen around 1676 in Germany, by Sir Ralph Vernel in 1780 in England, the Chinese literature mentioned the *datuna* about 1600 B.C. The first patents were granted to toothbrush manufacturers in 1840 in England, and in 1869 in the United States. Toothbrushes with acrylic bristles were introduced in 1938.

5. Although there has been a great improvement in the oral hygiene habits of the American and European people, still only a small percentage follow the oral hygiene practices which are so important in maintaining dental health. The toothbrush too often is regarded as an incidental possession, seldom replaced when it wears out.

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The dependence of permanent tooth loss upon tooth morbidity

I. Szabó. *Human Biol.* 31:180-186 May 1959

The effects of tooth morbidity on tooth loss have not been studied adequately. Past studies deal only with tooth mortality; they correlate loss of teeth only to the number of examinees. A more proper procedure would be to correlate tooth loss with the number of carious teeth. In this way, tooth lethality may be computed. The author has adopted the term "tooth lethality" for the tooth mortality per 100 DMF teeth.

The influence of tooth morbidity on the loss of permanent first molars in the school population from 10 to 18 years old in three Hungarian urban communities was studied.

Tooth lethality increases with the increasing prevalence of dental caries in the younger age brackets. In the youth 16 to 18 years old, however, there is less tendency for tooth loss to vary with the variations in DMF rates.

Department of Stomatology, University Medical School, Debrecen, Hungary

Fluoridation

Arthur S. Flemming. *Pub.Health Rep.* 74:511-513 June 1959

In the past two years there has been a significant setback in the progress of the fluoridation program. Although controlled fluoridation has been proved over and over again to be an inexpensive and safe means of preventing 65 per cent of dental caries, only one of every four people in this country today has this protection. Moreover, the proportion of the population not benefiting from this remarkable health measure is increasing.

The extension of fluoridation has been lagging the past two years because the opponents of fluoridation are a militant minority and the proponents of fluoridation are an unmilitant majority.

Fluoridation would proceed rapidly if the question were decided on its merits by informed people.

Some informed people will continue to oppose fluoridation as a matter of principle. I respect their views even though I cannot, on the basis of the scientific evidence, concur in their conclusions. But such persons are not, by and large, the ones who succeed in blocking local fluoridation projects. Some of the most vocal opponents of fluoridation are persons who have been charged by the Food and Drug Administration with making false health claims for nostrums and devices and thereby influencing their customers against seeking needed medical service.

The kind of opposition of fluoridation which we now are experiencing is similar to that which arose in the early days of such invaluable health measures as chlorination of public water supplies, pasteurization of milk, and vaccination.

It is tragic to deny millions of children the benefits of healthy teeth, particularly when, in addition to the scientific evidence that points to the efficacy of fluoridation, public opinion polls

indicate that a majority of citizens desire to take advantage of this established health measure.

A poll by Elmo Roper and associates in 1957 showed that 57 per cent of the people in cities of 1,000,000 and over said fluoridation was a good thing, whereas only 20 per cent said it was not. In communities of 100,000 to 1,000,000, the response was 50 per cent for and 19 per cent opposed, and in communities of 2,500 to 100,000 it was 54 per cent for and 24 per cent against.

In 1953, when fluoridation was still relatively new, and before the opposition became fully organized, a poll by Dr. George Gallup showed that people who knew about fluoridation favored its adoption as a community health measure by a margin of nearly four to one.

What is needed is a militant majority for fluoridation.

Secretary of Health, Education, and Welfare, Washington, D.C.

Dental health service for dependent or neglected children under agency care

Charles A. MacIntyre. *Pennsylvania D.J.* 26:5:3-6 May 1959

A satisfactory method of payment for dental health services for dependent and neglected children who are under the care of private and public agencies is needed. Such services are necessarily limited by the availability of funds, and consequently dental care for these children often is limited to emergency treatment for pain. To provide adequate dental health services, cooperation between the agency and the dental profession is essential to establish satisfactory reimbursement methods.

A dentist may be reimbursed for his professional services on the basis of: (1) time, (2) specific service rendered, or (3) capitation.

The time basis of payment (wherein the dentist is paid for his services by an annual salary, or is paid per session or per hour or on a retainer basis) is particulary well-adapted for agencies which maintain institutions for the care of children.

Fee-for-service payment can be adapted to various situations and the care can be provided in the institution or the private dental office. This type of payment is used today by the Veterans Administration. The fee-for-service payment is a useful means of obtaining dental service when the children under the care of the agency are distributed over a wide area. Budgeting under a fee-for-service program is difficult. A consulting dentist should be employed by the agency to confirm the diagnosis and prognosis of the participating dentist.

The capitation basis of payment, under which the agency agrees to pay so much per time unit for each child under care, probably would be the most expensive for a child care agency, but it also would be the easiest payment method for the director of the agency to budget.

If the agency maintains an institution, the most economical method of providing and paying for dental service is the time method, with the institution providing the necessary equipment and supplies and the dentist being paid by the hour for his services. The initial cost of setting up a dental clinic with new equipment and supplies is about $7,500; many dental supply houses will grant a 10 or 12 per cent discount to nonprofit institutions and governmental agencies.

In setting up any method of payment for dental care, the agency director and representatives of the local dental society should confer and determine policies for the program. They should select a consulting dentist, determine the maximum fees and decide how the participating dentists will be selected.

Division of Dental Health, Department of Health, Harrisburg, Pa.

Red and white cells in mouth rinsings

James L. McClendon and Sumter S. Arnim. *J.Indiana D.A.* 38:276-282 June-July 1959

From three subjects, 83 samples of mouth rinsings were taken before and after the teeth were brushed with soft, round-end nylon bristle toothbrushes or hard, cut-end nylon bristle toothbrushes.

A rinse of 10 cc. of isotonic sodium chloride solution was passed gently and thoroughly throughout the mouth for 30 seconds. It was spat into a beaker. The procedure was repeated with a second rinse. The teeth and gingiva were then

brushed on the labial and lingual surfaces of one quadrant for 30 seconds, after which the mouth was rinsed immediately as before and the rinse collected. The toothbrush also was rinsed in 10 cc. of isotonic sodium chloride solution. The four tubes containing the before and after rinses were centrifuged, and the red and white blood cells counted.

Both red and white blood cells were present in all samples of sediment, regardless of the clinical condition of the mouth or of the type of brush used. The mean number of red cells present in the 83 samples of mouth rinsings before brushing was 13.2; the mean number after brushing with soft, round-end bristles was 139.3; after brushing with hard, cut-end bristles, 272.7. The mean number of white cells was 49.7 before brushing; 22.9 after brushing with soft, round-end bristles, and 24.1 after brushing with hard, cut-end bristles.

Some fresh blood was present at all times in the mouths of the three subjects studied.

The increase in the number of red blood cells after brushing suggests that these cells are deeply embedded within the zooglea of the microcosm and that direct application of toothbrush bristles is a more effective means for removing them than a simple saline rinse.

The decrease in the number of white blood cells after brushing indicates that these cells wander from the depths of the pockets, sulci and mucous membranes, congregate on or near the surface, and are readily dislodged therefrom by a vigorous saline rinse.

Dental Branch, University of Texas, Houston, Texas

Incidence of caries in first permanent molars

V.M.Duteil and R.A.Pagan. *Rev. D., Puerto Rico* 11:48-53 April-May-June 1959

A survey on the incidence of caries in first permanent molars of school children of Bayamón, Puerto Rico, was carried out in 1958, after completion of five years of fluoridation of the drinking waters of that city. One thousand five hundred and thirty-three school children between the ages of 6 and 15 years were examined. Of 7,732 first permanent molars examined, 4,634 (59 per cent) were carious or had been carious. Four hundred and forty-one had been filled and 4,193, including carious and missing, had had no treatment at all. Of 4,634 carious first permanent molars, 1,360 (29 per cent) had been extracted. The results of the survey showed an average incidence of 2.49 carious first permanent molars for every child between the ages of 6 and 15 years.

This acute problem calls for the development of emergency programs for the purpose of preventing the high incidence of caries of first permanent molars, which are of the greatest importance in the dental arches.

Negociado de Higiene Oral Departamento de Salud, San Juan, Puerto Rico

Study shows fluoride addition to water supply effective

New York State Dept. of Health Bul. 12:77-80 May 18, 1959

A study of water fluoridation practices in 20 major cities of the United States has been completed by the research division of the New York University College of Engineering. The 20 water systems are providing fluoridated water to 18,721,220 people. Among the cities studied were Buffalo and Rochester, N. Y., Baltimore, Charlotte, N. C., Chicago, Cleveland, Denver, Indianapolis, Louisville, Ky., Miami, Fla., Milwaukee, Norfolk, Va., Philadelphia, Pittsburgh, Providence, R. I., St. Louis, St. Paul, San Francisco, Toledo, Ohio, and Washington, D. C. Populations served range from 185,000 to 4,400,000.

The study was made at the request of the New York State Health Department, to seek answers to "a number of engineering questions raised among water works officials, state departments of health, research groups and practicing engineers with respect to technical problems encountered in the introduction of fluorine into the water supply."

Among the main findings of the study were the following:

1. Fluorides can be effectively added to the water supplies of both large and small communities.

2. All engineering problems have been solved with respect to ability of water works personnel to control chemical dosage; safety of employees;

cost of structures; cost and capability of equipment; cost and availability of chemicals; persistence of residual fluoride ion in the entire system, and laboratory control methods.

3. In no instance do long periods of overdosage occur.

4. Neither the length of line, time of flow, age of pipe, nor materials to which water is exposed, significantly affect the average fluoride ion content in distribution systems.

5. In no instance was there a report of pipeline corrosion traceable to fluoride content.

6. The average annual per capita cost in eight cities having more than 800,000 population was 8.4 cents.

7. There was no evidence of uncontrollable potential employee health hazard introduced by handling fluoride-bearing chemicals.

8. There was no evidence that employees handling fluoride-bearing chemicals had been affected physiologically by their activity.

State Department of Health, Albany 8, N.Y.

The public dental service

B. L. Pigott. *Irish D.Rev.* 5:3-8
Jan. 1959

In Ireland the Health Acts of 1947 to 1958 have imposed on local authorities an obligation to provide dental treatment for the 500,000 pupils of national schools, children attending child welfare clinics, and the 700,000 persons in the lower income group. Local authorities presently employ about 75 full-time dentists; this gives a ratio of one dentist to 16,000 eligible persons. If the 700,000 lower income persons are excluded, the ratio is 1:6,600. The Dental Consultative Council estimates that one dentist can care for 3,000 school children, including a yearly dental inspection and treatment for all who require it. Such a dentist-patient ratio is unrealistic.

The dental profession must consider how to meet its formidable responsibilities with the limited finances and manpower available. The first necessity is the establishment of a satisfactory dental service for school children. The greatest possible proportion of the available public funds should be devoted to children's dentistry; the amount of money spent on adults in the lower income group should be kept to a minimum. Previous efforts to develop a satisfactory school dental service have been incorrect. Both money and dentists have been "spread" as thinly as possible to ensure that the majority got a semblance of dental service. The ideal is to provide comprehensive treatment for as many children as possible. The policy should be to provide comprehensive treatment for a limited number of children by both full-time and part-time public dental officers. Service to other school children should be limited to emergency treatment; if conservative treatment is required, it should be done by private practitioners outside the school dental service. In rural areas, those examined and treated should be inspected each year and re-treated if necessary. In this way, it should be possible to increase the number of children treated each year, as the children already treated will not require as much treatment on second and subsequent inspections. In urban areas the public dental officers could treat the 6 to 8 year old children and encourage them to continue treatment with private practitioners. In this way it would be possible to build up the school dental services and to extend their scope as more resources are made available for dental service and as preventive measures can be introduced which will aid in the prevention of caries.

The public dental officer should advise his local authority on the efficacy of fluoridation of public water supplies. In rural districts where only a small percentage of the population drinks piped water, intensive courses of topical applications of fluoride could be used to reduce the caries rate.

The public dental officer should study the proper use of dental assistants. He should give lectures on dental health, and show films and slides to school children and to other groups. In each local authority area, a senior dental officer should be appointed, at a salary commensurate with other professional salaries paid by the local authority. His duties would be administrative, operative and preventative. All other public dental officers should be on a part-time and pensionable basis, and should be allowed a limited private practice. This would encourage dentists to commence practice in smaller centers where they would have a regular income from the school dental service. According to the 1958 *Dental*

Register, almost 50 per cent of the dentists in Ireland now reside in Dublin, Cork, Limerick and Waterford.

It is hoped that public health dentistry will become a specialized branch of dentistry, that special courses will be established and that postgraduate qualifications (such as exist in the United States) will be provided.

43 Parkgate Street, Dublin, Ireland

An examination of dental record cards of school children with special reference to earlier treatment of caries

Kjell Märtensson. *Odont.Revy.* 10:36-46 Jan. 1959

To obtain a conception of the amount of work and time expended on the treatment of first permanent molars as compared with that expended on the other teeth of the permanent dentition, the author examined the dental record cards of 105 school children (56 girls and 49 boys) 13 years old. All had received regular dental treatment of the permanent teeth about once annually from the age of six years.

The girls had had 22 first permanent molars extracted, the boys 5.

Nineteen (4.5 per cent) of the first permanent molars had received pulp treatments.

Twenty-seven (6.1 per cent) of the first permanent molars had been extracted.

Only one of the 420 first permanent molars was free of caries. There were 1,131 DMF surfaces on the 420 teeth. About 99 per cent of the occlusal surfaces, 50 per cent of the mesial surfaces and 19 per cent of the distal surfaces were either decayed, missing or filled.

Exactly 1,472 surfaces on the 420 teeth had been restored during 885 visits for treatment. During the same period, 1,041 surfaces of cuspids and bicuspids in the 105 children had been restored during 705 visits for treatment, and 559 surfaces of incisors had been restored during 475 visits.

Thus, 48 per cent of the total number of restored surfaces, and 43 per cent of the number of visits for treatment, were assigned to the first permanent molars.

Malmö Stads Folktandvård, Malmö, Sweden

Correlation between caries prevalence in different types of teeth

Peter Adler. *J.dent.Belge* 50:114-120 March-April 1959

The susceptibility to caries of the specific tooth types, as indicated by the presence of carious lesions, was investigated in large groups of high school students at the dental department of the University of Debrecen, Hungary.

Dental examinations with mouth mirrors and probes were carried out in 865 boys and 904 girls, between the ages of 16 and 18 years, from three Hungarian provincial cities. At this age, carious lesions were sufficiently present in certain tooth types other than the first permanent molars to permit useful comparison.

Because of the difference in individual susceptibility to caries and the chronological sequence of eruption of the various tooth types, comparison was limited to the following permanent teeth: (1) upper and lower first molars; (2) upper and lower second molars; (3) upper first and second bicuspids, and (4) upper central and lateral incisors. The presence of carious lesions in these four tooth types were recorded by using the DMF index in tooth units.

The students were grouped according to age and sex. Group I consisted of 311 boys, 16 years old; Group II of 294 boys, 17 years old; Group III of 260 boys, 18 years old; Group IV of 411 girls, 16 years old; Group V of 294 girls, 17 years old, and Group VI of 199 girls, 18 years old.

The correlation coefficients were computed in all possible combinations in these groups, and then converted into regression equations.

In Groups III and VI, the incidence of caries was found to lie within the regression equation in the frequency distribution measured by the coefficient of variation (scatter) in Groups I and IV. The average DMF counts lay outside the scatter values in upper and lower first molars and upper first and second bicuspids of Groups V and VI.

Percentage values of individual DMF counts outside the regression equation in both Group I and Group IV were found in 55.3 per cent.

The statistically significant values for correlation coefficients between the caries incidence in the various tooth types demonstrated a regular and intensive connection between caries of dif-

ferent tooth types in the same individual. Apparently, susceptibility to caries relates more to the individual than to the tooth type. If the caries incidence in all tooth types was established it would be possible to forecast the caries frequency at a later age for most tooth types.

The findings indicated that a strong relation exists and is maintained between the caries experience in the various tooth types and advancing age.

In some instances, however, divergencies in the caries increment were observed in the different tooth types during advancing age. Such divergencies were detected more often in girls than in boys, especially in Group VI. In certain individuals the regression equations for one specific tooth type did not permit prognosis of the progress of caries in another tooth type. This may be due to the complex factors which determine the development of carious lesions in different teeth in the same individual.

In explaining these partly conflicting findings, consideration must be given to the role of environmental factors rather than of genetic factors in determining the occurrence of carious lesions. In spite of the evident similarity between the yearly caries increase in boys and girls with advancing age, there are apparently some differences in the caries incidence which may be associated with sex factors, of which little is known. This problem merits a more detailed study.

Dental Department, University of Debrecen, Hungary

Effects of manganese on caries susceptibility

J. Münch and M. Winiker. *Zahnärztl.Praxis* 10:173-174 Aug. 1, 1959

The possibility that trace elements other than fluorine may play an important role in prevention or reduction of dental caries deserves intensive research studies.

Investigations carried out at the Dental Institute of the Humboldt University in Berlin seem to indicate that the trace element manganese renders the teeth more resistant to caries.

In the first part of the study, human teeth, after careful cleaning with pumice and water, were covered with wax. A window was cut into the protective wax layer to expose a part of the enamel. The prepared teeth were submerged in a potassium manganese solution for 24 hours. After several rinsings with distilled water, a second window was cut into the wax layer. The teeth were exposed to the effects of diluted organic acids (malic acid, tartaric acid, and citric acid) for 20 minutes, 1, 2 and 24 hours. After these periods, the teeth were examined microscopically for changes in the enamel structure. The concentration of the potassium manganese solution was 3.165 and 12.64 Gm. per liter, and that of the acid solution was 10 per cent. The results of the first part of the study were as follows:

1. In the majority of instances, the trace element manganese rendered the exposed enamel less susceptible to the effects of the organic acids.
2. The resistance of the enamel to the effects of the organic acids seemed to be independent from the concentration strength of the potassium manganese solution.
3. There was no significant difference between the resistance of the exposed enamel to the effects of the three organic acids.

The second part of the study consisted of animal experiments.

Forty Syrian golden hamsters (21 male and 19 female animals), about six weeks old, were divided into four groups, each consisting of 10 animals.

Group I, 5 male and 5 female hamsters, received a normal diet, consisting of oats, barley, vegetables and milk.

Group II, 6 male and 4 female hamsters, received a cariogenic diet, consisting of 300 Gm. sugar, 300 Gm. wheat flour, 380 Gm. Indian corn, 150 Gm. milk powder, 10 Gm. sodium bicarbonate and 375 ml. distilled water, baked into biscuits.

Group III, 5 male and 5 female hamsters, received the cariogenic diet to which 0.10 mg. manganese per week in the form of potassium manganese solution was added.

Group IV, 5 male and 5 female hamsters, received the cariogenic diet to which 0.40 mg. manganese per week in the form of subcutaneous injection of potassium manganese solution was added.

The carious cavities in the molars were recorded. In Group I, the female hamsters had 8 cavities in the upper jaw and 4 in the lower jaw; the male hamsters, 10 cavities in the upper jaw and 6 in the lower jaw.

In Group II, the female hamsters had 19 cavities in the upper jaw and 15 in the lower jaw; the male hamsters, 28 cavities in the upper jaw and 21 in the lower jaw.

In Group III, the female hamsters had 7 cavities in the upper jaw and 6 cavities in the lower jaw; the male hamsters, 11 cavities in the upper jaw and 10 cavities in the lower jaw.

In Group IV, the female hamsters had 7 cavities in the upper jaw and 7 cavities in the lower jaw; the male hamsters, 8 cavities in the upper jaw and 4 cavities in the lower jaw.

The difference between the caries incidence of Group II (cariogenic diet), and Groups III and IV (cariogenic diet to which manganese was added) was statistically so significant that it seems indicated that manganese must be considered a factor responsible for increasing the resistance to caries. Additional research is necessary to confirm the results of this study and to investigate the mechanism through which manganese exerts its beneficial effects on the hard tooth substances.

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A resilient interdental splint for an edentulous athlete in contact sports

Gerard H. Schoen and Joseph T. Rowbottom.
New York State D.J. 25:307-308 Aug.-Sept. 1959

All of the factors, except the preservation of tooth structure, that make mouth protection desirable for an athlete with full dentition apply to an edentulous athlete. The force of any severe blow to the mandible may be transmitted through the condyles to the glenoid fossae, which are close to the floor of the brain case; such a blow is the cause of a concussion. The neck of the condyle may be fractured by such a blow. When the bite is opened with an interdental, resilient splint, the condyles are moved out of intimate contact with their respective glenoid fossae and a cushion is provided to absorb a severe blow to the mandible.

A high school football player had an edentulous maxilla. It was considered unsafe to allow him to play football while wearing his upper denture, or without his denture. An interdental splint was made for him. He wore it throughout the football season, and suffered no injury to the soft or hard tissues. The patient reported good retention and comfortable wear. There was little impediment to speech and none to breathing.

An alginate maxillary impression was made, and a lower counter impression taken, from which stone casts were fashioned. A soft wax squash bite was taken; thus the vertical dimension and centric relation were established. The casts were mounted on a straight-line articulator. One thickness of baseplate wax was adapted over the upper cast. Four tissue-bearing stops were cut through the wax, two in each quadrant of the maxilla. On this, a horseshoe-shaped core of self-curing acrylic resin was processed. The core covered the ridge and extended into the mucobuccal fold and over the tuberosities. This served as a rigid core for the mouth protector. The core was profusely perforated to allow the latex rubber to adhere to both sides. The spacing layer of wax then was removed from the cast and a thick layer of liquid latex rubber was painted on the surface of the cast. The tissue side of the acrylic core also was lightly covered with latex. The core then was placed back on the cast and pushed down until the stops touched the cast; the base layer of rubber extruded through the perforations. The outside surface of the core then was coated with latex about 1 mm. thick. A biterim of latex was built up on the appliance, to a height sufficient to open the bite about 2 mm. After curing, the device became a horseshoe-shaped rubber appliance with a rigid acrylic center and a resilient layer of rubber on all tissue-bearing surfaces. The biterim conformed to the occlusal plane of the maxilla and provided a bite plane for the anterior teeth so that in any excursion of the jaw there would be both anterior and posterior contact. Muscle attachments were relieved by trimming the periphery of the mouthpiece with curved surgical shears.

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Therapeutics

Azo-compounds in dental practice

Philipp Treber. *Zahnärztl.Praxis* 10:149-150
July 1, 1959

The use of antibiotics and sulfonamides in dental practice, although initially successful against various oral infections, has produced not only an increase in the bacterial resistance but also an increase in allergic reactions and a variety of side effects.

In the past 25 years, several azo-compounds have been developed which enable the dentist to avoid the occurrence of side effects and unfavorable allergic or local reactions often associated with antibiotic therapy.

"Azohel," produced by Hubolt & Bartsch and Pharmacolor Company in Sandkrug/Olderburg, Germany, is a 4 per cent alcohol-glycerin solution of diamino-azobenzene, and belongs to the group of azo dyes. Chemically it is related to the sulfonamide compounds without having their toxic properties producing high temperature, rash, disturbances of the conjunctiva and sclera, hepatitis, leukopenia, granulocytopenia, agranulocytosis, hemolytic anemia, hematuria or other toxic manifestations.

Azohel has definite bactericidal properties especially against staphylococci, streptococci and gram-positive bacteria. This drug can be successfully substituted for penicillin and other antibiotics in the treatment of oral infections caused by bacterial strains resistant to these antibiotics.

In the author's dental practice 435 patients were treated by topical application (brushing of the gingivae, interdental spaces and periodontal pockets) of the Azohel solution; there were no toxic or allergic reactions.

Of the 435 patients, 163 had gingivitis; 58, stomatitis; 47, disturbance in tooth eruption; 67, extreme pain after tooth extraction; 34, periodontitis; 33, complications after oral surgical interventions, and 38, pressure sores.

In all these instances, Azohel has proved to be effective against a wide spectrum of microorganisms including many aerobic and anaerobic gram-positive bacteria, beta-hemolytic streptococci, pneumococci and staphylococci.

Azohel can be recommended to dental practice because of its low sensitizing tendency and its possibility for use in combination with antibiotics (either separately or in mixed preparations) or with other azo-compounds ("Azoiodine" and "Azulon" powder or salve) in difficult instances in which bacteriological tests have established that the causative infectious microorganism is resistent to single drugs but susceptible to the specific combination.

Lindenstrasse 21, Köln, Germany

Aspirin and its dosage

W. Antony Ball. *Lancet* No. 7068:365
Feb. 14, 1959

Acetylsalicylic acid is perhaps the most used drug in modern life. In spite of this, its pharmacology is either unknown or baffling in its simplicity. To some patients, aspirin is a miracle worker, to others it is a drug which is used in great quantities without much effect. The secret is in the dosage. In the author's opinion, the most potent analgesic dose is a small one in the region of 5 grains (one tablet).

When the author suffered from toothache off and on for a year or two, he tried one aspirin tablet, which each time succeeded in relieving the pain. If two tablets were taken, they proved ineffective. For years now, the author has ordered aspirin to be taken in 5 grain doses, to be repeated after an hour—usually, needless to say, in a disguised form. Lately, he has been able to prescribe openly one tablet to patients and to confirm that this is the best dose.

There are two possible explanations. As with potassium iodide, doubling the dose may decrease the effect, perhaps by encouraging elimination of the drug. Aspirin has two actions, being both analgesic and antipyretic. If the pain is inflammatory, then the antipyretic action, by increasing the blood supply to the inflamed parts, will increase the pain.

Aspirin lately has been coming back to favor. It is used extensively in chronic rheumatism, and is held to have a cortisonelike effect. The author has found that 5 grains of aspirin three times daily is effective in the treatment of chronic rheumatism and osteoarthritis. Most patients benefit from a reduction in the dosage from 10 grains to 5 grains.

Petworth, Sussex, England

Some native herbal remedies at present in use in Mashonaland

H. Wild and M. Gelfand. *Central African J.Med.* 5:292-305 June 1959

For years scientists have taken an interest in the plant remedies used by Africans in the hope that some might possess unrecognized pharmacological properties of use to medical science. The number of plants used by natives is very large. The development of native medical lore naturally has been empirical and, as with the medical sciences of Europe in medieval times, plants have been chosen either on the principle of signatures (that is, the fancied resemblance of some plant organ to the human organ which it is required to treat), or for psychological rather than pharmacological reasons.

In an attempt to try to select those native remedies that may have survived because of their real value, a small team has been visiting a number of reserves in Mashonaland, a region in Southern Rhodesia inhabited by the Mashona. The team consisted of a physician, a botanist, an African *nganga* (native herbalist or physician) and an interpreter. The team investigated areas selected by the *nganga*, who pointed out the trees, shrubs or herbs he used, giving their African names and medical uses. The botanist identified the plant and the physician made notes on the symptoms of the disease concerned, and the methods of application of the remedy.

Lists from various *nganga* were analyzed to see if there was any correlation between them. A table lists 240 specimens and 143 species, of which 13 species were common to three *nganga* and 18 to two *nganga*.

The traditional *nganga* is a fine field botanist, but African children are becoming urbanized and losing interest in their fathers' knowledge of the veld. African herbal lore is diminishing rapidly, and studies of this nature should be pressed forward while there is still time.

The only herbs of specific dental interest that were noted are *Monotes glaber*, used to stop the pain of toothache (the root is put on the tooth and chewed), and *Tephrosia radicans* (the root is dried, mixed with water and a few drops of the mixture are placed in the ear on the side where the tooth aches.)

Federal Department of Agriculture, Salisbury, Southern Rhodesia

The effect of phenglutarimid (Aturbane) on salivary secretion in man

Gordon M. Wyant and Frank C. Haley. *Anesthesiology* 20:581-584 Sept.-Oct. 1959

Phenglutarimid, introduced in 1958 for the treatment of extrapyramidal disturbances, has been shown to have strong peripheral parasympatholytic properties in animals. Its effect on salivary secretion in man seemed worthy of investigation.

Six healthy medical students volunteered for the experiment. Saliva was collected from their parotid ducts after stimulation of secretion by the intravenous injection of a mixture of carbachol and epinephrine, after administration of various doses of phenglutarimid.

It was found that phenglutarimid 2.5 mg. intravenously is 97 per cent effective as an antisialogogue, and thus is equal to *d,l*-hyoscyamine (atropine) 0.6 mg. or *l*-hyoscine (scopolamine) 0.2 mg. under the same experimental conditions. Cardiovascular and other side effects were minimal after the intravenous administration of 5 mg. of phenglutarimid.

Phenglutarimid is a potent depressor of salivary secretion in man. It lacks the sedative properties of scopolamine which are so useful in preoperative medication. No attempt has been made to evaluate phenglutarimid clinically, but it appears that the drug is worthy of being so tested.

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Roentgenology

Some observations on the role of the dental assistant in radiography

Seymour H. Yale. *D.Asst.* 28:5-6 July-Aug. 1959

Roentgenograms serve three major objectives in dentistry; they provide a basis for diagnosis and treatment planning; they supply a chronologic record of the patient's dental progress; they function as an important aid to patient education. The dental assistant's training in roentgenographic procedures should mirror these three objectives.

Roentgenography is a major province of the dental assistant. She should recognize both the scope and the limitations of her responsibilities in this field. For example, a patient's questions as to the standards of radiation safety are best answered by the dentist. For her own protection, the dental assistant should know that proper filtration and collimation of the x-ray machine contribute to good radiation hygiene.

In her telephone conversation with a new patient, the assistant has the opportunity to mention that roentgenograms usually are taken at the first visit. Such an approach reflects the dentist's emphasis on thorough diagnosis, and at the same time helps to allay the fear of the patient who now knows what the major part of the first visit will involve.

Good results in intraoral roentgenography depend in part on proper patient management. Each step should be carried out decisively and systematically. Using a pleasant, well-modulated voice, the dental assistant should encourage the patient to relax completely, with the arms hanging at the sides of the dental chair. Soon the neck and mandible droop. The mylohyoid muscle becomes limp. Saliva flows normally and the mouth is no longer dry. Such a relaxed patient is receptive to the coming roentgenographic procedure and rarely complains that film packets cut the floor of the mouth. Once the film packets are exposed, the films should be processed while the patient is in the chair. If the dentist decides that retakes or additional views are required, these can be taken; the dental assistant simply informs the patient that the dentist needs additional roentgenograms for diagnosis. The assistant must never discuss the interpretation of the roentgenograms with the patient.

Good darkroom housekeeping is reflected in the quality of the roentgenograms. The following points are essential to obtain roentgenograms of maximum quality:

1. In the average dental office, processing solutions must be changed monthly.
2. To eliminate possible fogging of the film, processing should be done in complete darkness. There are no safe "safelights."
3. Films should be developed by the time-temperature method. Sight developing produces poor, inconsistent results.
4. The films should be thoroughly washed after both development and fixation.
5. A fixation period of 20 minutes is mandatory to avoid ultimate deterioration of the emulsion.

The roentgenograms must be mounted accurately if they are to be utilized effectively by the dentist for diagnosis and patient education. In preparation for mounting the roentgenograms, it is helpful to arrange them in proper order on an illuminator that lies flat. Such a procedure assures accurate mounting with a minimum of handling. The mounted roentgenograms are identified with the patient's name and date of roentgenography. The dental assistant completes the final step in her phase of this service by filing the roentgenograms properly.

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Radiation problems of dental x-rays: results of study in Jefferson County, Kentucky

E. B. Gernert. *J.Kentucky D.A.* 11:2:4-7 April 1959

In the spring and summer of 1958 the dental division of the Louisville and Jefferson County Health Department conducted a study of 275

dental x-ray machines in Jefferson County. A follow-up study was conducted in November 1958. The study was undertaken at the request of dentists, and 98 per cent of the practicing dentists in the county participated.

The study was undertaken to: (1) determine the primary beam output of the x-ray machine; (2) measure the scatter and secondary radiation; (3) check the machine for adequacy of aluminum filters and lead diaphragms; (4) compile data on the film used, average exposure time and average number of exposures per week, and (5) check the positions of office personnel during operation of the machine.

Data were collected by a team equipped with lead aprons, a phantom head, a gamma survey meter, an ionization chamber and a kit containing various sizes of aluminum filters and lead diaphragms. From the data obtained, indicated recommendations were made to each dentist as regards filtration, lead diaphragming to limit the beam to 2.75 inches at the cone tip, and the use of extra-fast or ultra-speed film. Suggestions also were made for longer timer cords and lead shielding where indicated. Each dentist who carried out the recommendations received a certificate.

Filters and diaphragms were used to demonstrate how radiation could be reduced, the parts numbers of the filter and diaphragm were given to the dentist and he was urged to order them.

The initial study revealed that about a fifth of the dentists were using single emulsion film and about a third had adequate filters and diaphragms on their x-ray machines. At the time of the follow-up study, the recommendations had been carried out on 220 (80 per cent) of the 275 x-ray machines. The follow-up is being continued with the goal of having 100 per cent certification of dental x-ray machines in the county.

The dentists of Jefferson County have demonstrated that they recognize their responsibility to reduce unnecessary radiation. Positive action by the profession obviates the need for government regulation. Radiation exposure can be reduced with no impairment of the needed diagnostic information, by the use of a few simple, practical measures.

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Angiography in the differentiation between neoplastic and inflammatory processes of the osseous and paraosseous tissues of the maxillofacial region

G. Gollman. *Radiol.Austriaca* 10:49-54
May 1959

Angiography may be a helpful procedure in certain instances for differentiating between neoplastic and infectious diseases occurring in the oral cavity.

Angiography aids in the diagnosis of an oral tumor by: (1) demonstrating the formation of blood circulation within the tumor; (2) demonstrating the displacement of arteries and veins in the involved region, and (3) demonstrating the presence of tumor strains or of the localized relative absence of blood vessels.

Displacement of blood vessels, however, is difficult to demonstrate in areas with a comparatively small blood flow under normal conditions. Because the vascular system of the maxillofacial bones cannot be visualized with routine angiography, an osseous tumor can be recognized in angiograms only in instances in which a periosteal involvement exists.

The most helpful angiographic finding in the differential diagnosis between tumor and infectious process in the maxillofacial region is the demonstration of the formation of a characteristic blood circulation within the tumor. Displacement of the blood vessels in the involved region is not specific and may be caused by tumors as well as by abscesses.

In certain instances, differentiation between benign and malignant oral tumors is facilitated by angiography. Irregularly shaped, reticular and widened blood vessels which show premature constriction as seen in arteriovenous fistulas are indicative but not conclusive for a malignant neoplasm. In several instances, the vascular supply was found to be ill-defined in malignant oral tumors.

A series of angiograms illustrates the value of angiography in the differential diagnosis between Ewing's tumor, osteomyelitis and other osseous lesions occurring in the oral cavity.

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Pathology

Oral and dental manifestations of histiocytosis X

Carson Blevins, David C. Dahlin,
Stanley A. Lovestedt and Roger L. J. Kennedy.
Oral Surg., Oral Med.& Oral Path. 12:473-483
April 1959

"Histiocytosis X" is a term coined by Lichtenstein in 1953 to include conditions characterized by enlarging solitary or multiple destructive aggregates of proliferating histiocytes predominating in (but frequently not confined to) bone.

A review was made of the case records of about 600 patients seen at the Mayo Clinic in the past three decades and given one or more of the following diagnoses: reticuloendotheliosis, xanthomatosis, Hand-Schüller-Christian disease, Letterer-Siwe disease, eosinophilic granuloma and histiocytosis X. In 66 patients there was sufficient clinical, roentgenographic and histological evidence to warrant the diagnosis of histiocytosis X; in 34 of these patients, oral and dental manifestations were the earliest symptoms or developed later. In 27 of the 34 patients with oral and dental involvement, fixed-tissue sections from associated lesions (not necessarily in the jaws) permitted histological confirmation of the diagnosis; the 27 case reports formed the series studied intensively.

Of the 27 patients, 20 were male and 7, female. The highest incidence of the disease occurred in both sexes during the first two years of life. The youngest patient was a baby girl two weeks old, and the oldest was a 44 year old man. The median age at onset of symptoms was 2.5 years for the males and 1.9 years for the females. Three-fourths of the entire group were less than eight years old at onset; the remainder were 20 years old or older.

Eleven of the 27 patients were pale and seemingly undernourished and in some degree of distress due to obvious systemic disease. Slightly more than half had a history of irritability, loss of appetite and weight, and low grade fever. Lymphadenopathy was found in 11 patients and hepatomegaly or splenomegaly (or both) was found in six patients. Dermal signs, varying from dry skin and eczema to ulcerations and furuncles, were present in almost half of the patients. Drainage from the ears, and other aural symptoms were pronounced in nine patients. Various degrees of diabetes insipidus were present in 11 patients and exophthalmos was present in 9 patients. Five patients also had softness, tenderness, and swelling over skeletal lesions, particularly those of the skull and ribs.

The hematologic and urinary findings were within normal limits in about half of the patients. Eight of the 27 patients showed various degrees of anemia.

In 12 of the 27 patients, oral and dental manifestations were the most significant clinical features and the chief reasons for seeking dental and medical advice. The most common oral findings (present in 25 of the 27 patients) were soreness, swelling, necrosis, and ulceration of the gingivae, with a gray, purulent exudate covering the involved regions. The enamel of the teeth in the involved regions was dull, gray and opaque. The breath of 23 patients had a foul, fetid odor. Other oral and dental complications were localized, tender, swollen regions of the jaws, loose teeth and the loss of teeth. Twenty-one patients complained of loose, "sore" teeth, and 17 had lost teeth either by the sloughing process or by extraction for relief of pain.

The most common roentgenographic finding was destruction of alveolar bone with displacement of fully formed and partially developed teeth. Such changes affected the mandible in 19 patients and the maxilla in 14. Serial periapical dental roentgenograms were available for study in eight patients. Almost invariably, the molar and bicuspid (deciduous molar in children) regions were the sites of initial involvement.

On microscopic examination, histiocytes were present in abundance in every patient. The nuclei of these pale-staining cells varied from round to oval to bean-shaped. In over 50 per cent of the lesions there were regions in which the histiocytes had become vacuolated foam cells filled with lipoid material. Large, benign-appearing, multinucleated giant cells were found in 17 patients.

The primary treatment for histiocytosis X usually consisted of roentgenotherapy. Of the 27 patients, no follow-up was obtained in 5; 7 patients grew progressively worse, with general dissemination of the disease, and died; 9 were considered on the road to recovery; 3 were judged to be well, and 3 experienced no considerable change. The over-all prognosis seemed to be poorer for the younger patients in the acute and subacute stages.

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Idiopathic lethal granulomas of the midline facial tissues

B. R. Alexander. *A.M.A.Arch.Dermat.* 79:390-394 April 1959

Idiopathic lethal granuloma of the midline facial tissues developed in a 48 year old woman in whom sprue had been diagnosed previously. She complained of a sore throat which had been treated unsuccessfully with penicillin and sulfonamides, of rather small but painful nodules, and of sinusitis and nasal "stuffiness" of several years' duration.

The pharynx and the soft palate were inflamed and congested, and the tonsils enlarged.

During her stay at the hospital, the patient improved without specific therapy, and after her dismissal she remained fairly well for about six months. After that time, she was readmitted for treatment of several ulcerations localized at the junction of the soft and hard palate.

Roentgenographic examinations revealed the presence of lesions of the hard palate which had penetrated the floor of the right nostril.

Bacterioscopic examinations of the ulcerous material showed a mixture of Neisseriaceae and alpha hemolytic streptococci, but no fungi.

Histopathological studies revealed the presence of necrotic granulation tissue.

In spite of the use of broad spectrum antibiotics and of general supporting therapy, the ulcerative and necrotic lesions of the hard palate became more painful and extensive.

A clinical diagnosis of idiopathic lethal granuloma of the midline facial tissues was made, and prednisolone was administered. Within a week there was moderate improvement. Two weeks later, however, swellings on the right side of the nose and of the upper jaw were observed. Transillumination revealed a specific shadow in the region of the right maxillary sinus, demonstrating that the granulomatous process had extended farther.

In spite of the increased prednisolone dosage now administered, the swelling progressed. There was loss of weight, weakness, cachexia, and progression of the granulomatous and ulcerative lesions. Finally the patient's vision became blurred, the eyes bulged, the face was grossly deformed, and there was a serosanguineous discharge from the eyes, mouth and nose. Death came ten months after the onset of pharyngitis.

Malignant granulomas of the midline facial tissues are associated with chronic sinusitis, psychic trauma, upper respiratory infections and sulfonamide therapy. It can be assumed that subsequently a relative adrenal insufficiency develops and, because of the lack of an "antagonistic" effect of the adrenal cortical hormones, a local tissue allergy (Arthus' phenomenon) and periarteritis nodosa appear.

Because of the adrenal insufficiency, adrenocorticotrophic hormone (ACTH) and cortisone have been used for palliation. In spite of the initial symptomatic improvement of the patient obtained by these drugs, the malignant process continued, with a rather rapid termination of life.

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Histology

Roentgenographic studies of hypercalcified dentin under fillings

J. Přibil and A. Plačková. *Československ.stomat.* 59:25-29 Jan. 1959

Roentgenographic studies of ground sections of teeth with unfilled open cavities revealed the presence of hypercalcified enamel (appearing transparent) and hypercalcified dentin (appearing opaque). Both layers seemed to be reliable barriers against the progress of dental caries. The hypercalcifications may have resulted from the shifting of calcium salts from the regions of decalcification into the adjoining tooth structures.

Opaque dentin has been proved by grenz ray examination to be hypercalcified.

Distinct regions of hypercalcification were observed beneath several fillings in routine roentgenograms. These regions were separated from the fillings by layers of decalcified dentin.

Ground sections of the teeth were examined roentgenographically from one to three years after completion of endodontic treatment. There were signs of decalcification and yellowish discoloration. The root canals were surrounded by opaque hypercalcified layers.

It was assumed that after the teeth were filled, some acidogenic microorganisms remained in the tubules lining the pulp chamber. These microorganisms produced acids which decalcified the dentin and liberated the calcium salts which reprecipitated in the periphery of the cavity, causing hypercalcification.

In the unfilled open cavities, some of the mobilized calcium salts were washed out by the flow of saliva. After endodontic treatment, however, the mobilized calcium salts remained undisturbed beneath the fillings and the entire amount of the calcium salts became available for the process of hypercalcification.

In 40 ground sections of teeth with caries of the dentin, an examination with grenz rays revealed the presence of hypercalcified and hypocalcified regions in the dentin close to the filled cavities. These regions were not always in conformity with the zones which appeared transparent or opaque in the roentgenograms. The zones of hypercalcification appeared mainly on the surface of the decalcified dentin, occasionally adjacent to the pulpal margin. Beneath small carious lesions of the enamel, there were hypercalcified stripes which had penetrated the dentin near the pulp chamber.

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Electron microscope studies of the tissue structure of enamel lamella: Part 1. Bovine enamel lamellae

Yasuyuki Awazawa. *J.Nihon Univ.School Den.* 1:158-163 March 1959 [in English]

A half century ago (1909) Bödecker discovered enamel lamellae. In the interim, the lamella tissue has not been defined histologically with any exactness. The author used an electron microscope in a histologic study of the enamel lamella of bovine teeth. The microscope revealed the following:

1. The lamellae consist of enamel rods and interprismatic substance which contains more organic matter than the rest of the enamel. In all but the wide lamellae, the rods are arranged in a single line.

2. Lamella tissue often is more complex or irregular than enamel tissue.

3. The observed complexity or irregularity of lamella tissue may be the result of a difficulty in distinguishing between rod sheaths and interprismatic substance.

4. In the teeth of cows, the lamellae vary in diameter from about 11 to 290 microns, whereas the diameter of enamel tufts in these teeth is only several microns.

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Biochemistry

Trace elements in ancient Indian teeth

L. T. Steadman, F. Brudevold, F. A. Smith, D. E. Gardner and M. F. Little. *J.D.Res.* 38:285-292 March-April 1959

This study was undertaken because it was felt that teeth which had been in contact with soil for hundreds of years might have acquired many trace elements.

Twelve permanent teeth of the remains of Pueblo Indians discovered in Pueblo Bonito were among the tooth samples studied. These teeth were believed to date from a period between 919 and 1130 A.D. Also studied were 23 permanent teeth from Indian Knoll, an aboriginal settlement close to the bank of Green River in Kentucky; these teeth were estimated by radiocarbon dating to be about 5,000 years old. Successive layers were ground from the enamel, collected and analyzed.

All trace elements were present in greater concentrations in the outer portion of the enamel than in the inner portion. Fluoride was found in greatest concentration in the external enamel, followed by zinc, silicon, manganese, lead, silver, copper and tin.

In the roots, as in the enamel, the concentration of the various trace elements was greater in surface rather than subsurface structures. The only exception was manganese which had an even distribution. Generally, the concentration of trace elements was greater in dentin than in enamel.

There was a remarkable similarity in the distribution of many elements in the teeth of ancient American Indians and those of contemporary Americans.

Contrary to expectation, there was little penetration of trace elements into the bulk of the tooth structure, even in 5,000 year old teeth.

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Fluorine in human bone related to age and the water supply of different regions

D. Jackson and S. M. Weidmann. *J.Path.& Bact.* 76:451-459 Oct. 1958

The amount of fluorine was estimated in the cancellous part of human ribs, obtained at necropsy, from three regions of England: Leeds, where the drinking water contains virtually no fluorine (fluoride ion); South Shields, 0.8 ppm, and West Hartlepool, 1.9 ppm.

In all instances the amount of fluorine increased with age up to about 55 years, when a plateau was reached. At this point, the average concentration of fluorine in bones from persons living in the respective regions was 190, 245 and 400 mg. per 100 Gm. of dry fat-free tissue.

When these results are compared with the results of a similar investigation carried out in Rochester, N.Y., by Smith and others (1953), it is noted that the cancellous bone of the Leeds rib specimens contains at the age of 50 years about twice the amount of fluorine as was found in the ribs examined in Rochester. The difference is attributed to an extra source of fluorine in the English dietary, presumed to be tea.

Available evidence suggests that in a temperate zone, 8 ppm of fluorine in the drinking water is below the critical dose. The fluorine content of bone in residents of Bartlett, Texas, where the water has 7 to 8 ppm fluorine, must have been much higher than that in West Hartlepool, and since there was no evidence of skeletal fluorosis in Bartlett, it is not to be expected that any would be found in West Hartlepool.

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Collagenosis and "reaction" diseases

G. Fanconi. *München.med.Wschr.* 101:581-586 April 3, 1959

In recent years a group of diseases have emerged which have in common specific biochemical and structural changes in the collagenous connective tissue of various organs and systems with manifestations in the oral cavity. These diseases, referred to collectively as "collagenoses," include

disseminated lupus erythematous, scleroderma, dermatomyositis, periarteritis nodosa, serum sickness, rheumatic fever and rheumatoid arthritis.

The designation "collagenosis" is open to criticism because the term refers only to the localization of the tissue alterations. In the present state of ignorance as to etiology and pathogenesis of these diseases, the noncommittal designation seems to be justified and should be continued. This grouping does not imply that all these diseases have a common or related causative factor or that they resemble each other pathogenetically.

Each disease in this group is a distinct pathologic entity having in common merely a basic pattern of injury to the collagenous connective tissue (fibrinoid degeneration of collagen).

The author favors the term "reaction" diseases because allergy plays an important part in their development.

Recent investigation of the common pathogenesis for the connective tissue changes and of the stimuli for the inflammatory plasma cell infiltration has revealed that in lupus erythematosus the anatomic alterations are caused by depolymerization of the nucleoprotein by desoxyribonuclease. It can be assumed, therefore, that all collagenoses have enzymatic derangements which affect the nucleoproteins of all mesenchymal tissues, especially the collagenous connective tissue.

At some future date, when the etiology and pathogenesis of these diseases are better understood, some or all of these diseases may be removed from the designation "collagenosis."

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Nomenclature of blood-clotting factors

Brit.M.J. No. 5132:1292-1294 May 16, 1959

The field of blood coagulation is one in which medical men and biological scientists have created such chaos that they do not even understand what other workers in the field are talking about, far less the clinician or the student.

The International Committee for the Standardization of the Nomenclature of Blood Clotting Factors, representing the leading workers in the field in 15 countries, after a study extending over three years, has recommended that the following blood-coagulating factors be recognized and assigned international symbols:

Factor I—fibrinogen.

Factor II—prothrombin.

Factor III—thromboplastin (tissue).

Factor IV—calcium.

Factor V—Deficiency of this factor results in a hemorrhagic diathesis which probably is inherited and has been described as a parahemophilia or hypoproaccelerinemia. The first case was recognized and described by Owren (1947) in Norway. This factor seems necessary for the formation of the prothrombin-converting substance in the blood and in tissue extracts.

Factor VII—This factor plays a part in the production of at least three groups of abnormal states. The level of this substance in the blood is species specific. Deficiency results in a quantitative prolongation of the one-stage prothrombin time test.

Factor VIII—A deficiency of this factor represents the classical hemophilia A, the hereditary hemorrhagic disease that occurs almost exclusively in males, but which is female sex-linked. A deficiency of this factor prolongs the clotting time, diminishes the thromboplastin formed, and diminishes the prothrombin conversion.

Factor IX—A deficiency of this factor produces hemophilia B, or Christmas disease. Factor IX, like Factor VIII, is essential for the formation of intrinsic blood thromboplastin.

A number of additional plasma and serum factors have been described by various workers who believe that they have established that the factors play a part in physiologic clotting of blood. These factors are under study by the Committee, and if the evidence indicates that the claims are valid, they will be assigned a roman numeral.

The ultimate contribution of this Committee to medical understanding and education will depend on the willingness of educators, editors and authors to adopt this nomenclature system in their day-to-day efforts to create the medical thinking and literature of the future.

Committee Chairman: Dr. Irving S. Wright, New York Hospital, 525 East Sixty-Eighth Street New York 21, N.Y.

Bacteriology

Blood sampling and cultural studies in the detection of postoperative bacteremias

E. G. Hampp. *Proc.Inst.Med.Chicago* 22:314-315 July 15, 1959

Although the possibility of a relationship between streptococcal endocarditis and dental operative procedures is well documented, the literature also contains 91 references to endocarditis associated with microorganisms other than streptococci. Modified blood sampling and cultural technics were used in an effort to detect bacteremias involving diverse groups of microorganisms.

Three mediums were employed. Medium CC was trypticase soy broth with 0.1 per cent agar, 0.0043 per cent *p*-aminobenzoic acid, 0.7 per cent gastric mucin, 0.17 per cent sodium citrate and 0.033 per cent saponin. Medium AS was a modification of Huntoon's hormone broth containing 0.2 per cent agar. Medium SC was the same as medium AS except that 0.17 per cent sodium citrate and 0.033 per cent saponin were added.

Medium CC was dispensed in 170 ml. amounts into 200 ml. Erlenmeyer flasks, then sterilized in the autoclave. Mediums AS and SC were dispensed aseptically in 142 ml. amounts into sterile 200 ml. Erlenmeyer flasks. Just prior to use, all flasks of mediums were heated in boiling water to remove residual air. After mediums AS and SC had cooled, 14 ml. of canine ascitic fluid and 14 ml. of a 1 per cent solution of glutathione were added aseptically. Aliquots of all mediums were incubated to insure sterility.

A preoperative sample of 10 ml. of blood was taken from all dental patients and inoculated into a flask containing medium CC. Postoperative blood samples were taken within five minutes after the clinician judged that maximal trauma had occurred. Forty-five ml. of blood were obtained in a 50 ml. graduated syringe; 15 ml. aliquots of blood were discharged aseptically into only one flask of the three mediums. The control and experimental flasks were incubated at 35°C.

Of 34 patients subjected to exodontia, postoperative bacteremias were found in 82 per cent; of 33 periodontal patients subjected to curettage, gingivectomy and other periodontal procedures, postoperative bacteremias were found in 88 per cent.

In 46 per cent of the exodontia patients in whom bacteremias occurred, only one type of microorganism was found; in 54 per cent, two or more different microorganisms were isolated simultaneously. In the periodontal patients in whom bacteremias occurred, 76 per cent yielded more than one microorganism.

Of 97 strains recovered from both groups of patients, 37 per cent were streptococci and 33 per cent were diphtheroids (primarily anaerobic or microaerophilic). There was no difference in the incidence of these microorganisms in the two groups of patients.

In addition, 34 per cent of the microorganisms isolated from the exodontia patients were less commonly encountered microorganisms; 2 per cent were *Vibrio;* 4 per cent, *Spirillum;* 8 per cent, *Bacteroides;* 6 per cent, *Actinomyces,* and 4 per cent, anaerobic, small, gram-positive motile rods.

Samples from the periodontal patients yielded the following microorganisms, either singly or in combination with others: *Vibrio,* 2 per cent; *Spirillum,* 4 per cent; *Bacteroides,* 12 per cent; *Veillonella,* 10 per cent; *Fusobacterium,* 14 per cent; *Actinomyces,* 14 per cent; *Leptotrichia,* 2 per cent, and anaerobic, small, gram-positive motile rods, 4 per cent.

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Dentistry around the world

Dentistry in Korea

Ch. Böhne. *Zahnärztl.Praxis* 10:100
April 15, 1959

Archaelogic studies of neolithic remains in Korea indicate that during the third millenium B.C. the "Han" people, who were Tungusic or Mongoloid invaders, moved into Korea from central Asia. They formed the dominant racial stock of the present Korean people and were the originators of the Korean language.

Racially the Koreans have the same general background as the Chinese and Japanese, although Koreans display distinguishing characteristics such as higher cheekbones and protruding jaws. Usually, the Koreans are taller than Chinese and Japanese.

In the average Korean, occlusion and masticatory function are better developed than in Europeans. General and dental health are also superior to that in most Asian and European countries. Serial dental examinations of Korean children have shown that almost 30 per cent are free from dental caries and periodontal disease. Because the average yearly income of a Korean worker is about $80, it is almost impossible to buy any nutritional luxury items such as sugar or bakery goods except bread. The main part of the Korean diet consists of sea food which provides protein, calcium and fluoride.

Oral hygiene, especially toothbrushing and mouth rinsing, is practiced regularly by children and adults. Proper care of the mouth and teeth is based on an old religious ritual. After each meal, during a ceremonial prayer, a small brass bowl filled with clear hot water is put before each participant for mouth rinsing. The interdental spaces are thoroughly cleaned with toothpicks and toothbrushes. Solutions of common salt in hot water are the only dentifrices used.

Dentistry in Korea is at a lower level than in most Asian countries. For the 25,000,000 inhabitants of the South Korean Republic there are only 1,000 trained dentists available. In the rural districts some dental technicians and many unlicensed "tooth artists" practice dentistry without being controlled by governmental agencies or professional organizations. As long as trained dentists are scarce, the government does not intend to interfere with the practice of charlatans.

Dental materials, instruments and drugs are not available in adequate quantities or quality. The trained dentists have to depend on the black market to obtain the most urgently needed materials and remedies, which usually are stolen from United States or United Nations troop transports. The United States Armed Forces have recently undertaken to train 500 Korean dental students. But there are no dental textbooks in the Korean language, and only a limited quantity of texts written in English or Japanese. Clinical education is hampered by the lack of instruments and, therefore, theoretical training is emphasized. It is hoped that the near future will bring improvement because several teachers from American and European dental schools have indicated their intention of going to Korea for teaching purposes and to help in translating dental textbooks into the Korean language. At the present time, there is only one dental school in Korea but there are eight medical schools.

(13b) München-Gräfelfing, Germany

William Combe and John Hunter's essay on the teeth

Harlan W. Hamilton. *J.Hist.Med.* 14:169-178 April 1959

Sir George Lefevre's account of his conversations with William Combe in 1820 recently has been brought to light by Lloyd G. Stevenson. Lefevre reported that Combe claimed to have written John Hunter's "essay on the teeth for him." Dr. Stevenson (1955) has examined this claim, asserted that it referred to Hunter's *Natural History of the Human Tooth* (London, 1771), and concluded that it is "by no means improbable" though necessarily "unproved."

Combe (1742–1823) a few days before his death drew up a list of his works, mentioning about 75 titles but not distinguishing between works he had written and works he had merely edited. No book by John Hunter is named on this list.

The testimony of his contemporaries indicates that Combe was prone to exaggerate his role in life and to encourage legends about himself.

Of Hunter, Combe said: "A young physician must publish himself into practice, or he will find it an uphill concern. I have helped more than one in this way. Nay, John Hunter was the worst writer that ever took pen in hand. I wrote his essay on the teeth for him, and it was a hard job too; for not only could I not understand him, but he evidently did not comprehend his own meaning. It was an Herculean labour to him to compose a sentence, and a week's work to make it intelligible, and yet he was a most extraordinary man, and the most laborious one I ever knew."

There is no reason to suppose that in 1771 a London bookseller would have thought Combe a proper person to edit Hunter's *Natural History*. It is unlikely that Combe was either near London in 1771 or free to undertake any editorial responsibility, for his fortune had collapsed in 1770 and he had fled the country.

There is nothing in Combe's own words specifying Hunter's *Natural History* as the "essay on the teeth" which he was claiming. The words may apply equally to the second part of that work, *A Practical Treatise on the Diseases of the Teeth; Intended as a Supplement to the Natural History of Those Parts*. This work was published in 1778, and thereafter the two parts were bound together and sold as a single volume. *A Practical Treatise* contains an introduction unlike anything in the *Natural History* but similar in style to things known to have been written by Combe. After the elaborate introduction, the book reverts to Hunter's downright style.

It appears that Combe's claim to Hunter's "essay on the teeth" is not entirely unsupported, if it is taken to refer to the 1778 volume rather than to that published in 1771. One need not go so far as to think that Combe acted as Dr. Hunter's "ghost" but Combe may have edited *A Practical Treatise*, as he edited other medical works.

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A window on history: French surgeon-barbers, Louis XIII, and the coat of arms of medieval dentistry

A. Bobbio. *Rev.A.Paul.Cir.Dent.* 13:108-110 March-April 1959

During the Middle Ages, the art of healing in France was exercised by members of three different professions. First were the physicians who had been educated by the medical faculties of universities, mainly at the University of Montpellier, founded in 1220, or the University of Paris, founded in 1270. The courses lasted for five years, and the new graduates were obliged to practice for another year as assistants to already established physicians. The physicians, however, as had been true in ancient times, disdained manual procedures and neglected surgery because they regarded it as an inferior art.

Surgery, including dentistry, consequently, was practiced by another group, the "Surgeons of St.

Cosmas," who were known as the "long-gown surgeons." Courses included one full year of anatomy. These surgeons formed their own professional society. The feeling between physicians and surgeons was not always amicable.

To these two professions, a third one was added. The "long-gown surgeons" were prejudiced against certain aspects of surgery, especially wound healing and dentistry. Procedures associated with these fields of the healing art were considered undignified, and these were left to the surgeon-barbers, commonly called "short-gown surgeons."

Although these two surgical professions formed separate professional societies, the relationship between them was obvious. Both societies had a common coat of arms which often was the cause of endless diatribes. The surgeon-barbers were regarded by the surgeons as poor relations whom it was best to ignore.

The coat of arms was composed of "three apothecary jars argent on a field azure," to which, at the time of the fifteenth century, a "straight bistoury" was added. Both surgical societies had as protectors St. Cosmas and St. Damian, who even today are regarded as the patrons of surgery and dentistry in France.

On September 27, 1601, Louis XIII, king of France, was born. This date not only has value in historical chronology, it also has a specific significance for French surgeons and dentists. September 27 is the feast day of St. Cosmas and St. Damian. At his birth, Louis XIII was nominated as an honorary member of the French Society of Surgeons. As the years passed, the king did not forget his affiliation with the society; in recognition thereof, he ordered that the French royal emblem, fleur-de-lys, should be added to the society's coat of arms.

In spite of the king's association with members of a profession who performed surgical and dental procedures, he suffered frequently from toothache. Although he was more fortunate than his ancestor Louis IX (Saint Louis) who died in 1270 at 56 years of age with only one tooth in his mouth, Louis XIII required quite often the services of his personal dentist, M. Dupont. Dupont was also the dentist of Louis XIV until 1669. His successor, François le Bert Villeneuve, was the first dentist officially attached to the royal court with the title "the king's dentist operator." M. Dupont referred to himself as "a charitable operator, who teaches the method of preserving the teeth, the dentist of the king and an expert in every type of disease and accident connected with the teeth."

De Prade stated that Dupont's task in treating Louis XIII was extremely difficult because the king's tongue was so thick and large that in order to approach the teeth, it had to be pushed in by the dentist's fingers. The physicians Potiquet and Cabanès (*Dents et Dentistes*) described the king's condition as adenoiditis.

Dupont, in spite of his unprofessional boasting, was unquestionably a dentist of ability. He published several books on dental subjects in 1633 which are now in the French National Library in Paris. He was especially interested in implantation and replantation of human teeth and described his technics and ideas in the work *Remèdes contre le mal aux dents.*

Avenida São João 126, Sobre-Loja, São Paulo, Brazil

General

The hidden political allusion in a dental etching by Francisco de Goya (1745–1828)

Curt Proskauer. *J.Hist.Med.& Allied Sc.* 14:354-359 July 1959

When the writer in 1926 described "Al Conde Palatino," plate 33 of the 82 aquatint plates entitled the "Caprichos" by Francisco José de Goya y Lucientes, he saw in this etching only a realistic representation of a dental extraction.

Wehle (1938) asserted that "Count Palatine" was a name assumed by a charlatan toothpuller in Madrid. Dagen (1923) said that the engraving may have been dedicated to a charlatan who masqueraded as a count. Jean Adhémar (1951) wrote that Goya "perhaps intended to represent" in the figure of the "quack doctor dressed as a Count Palatine the Minister Urquijo"; Adhémar was the first to suggest that the picture might be a veiled portrait of some political personality.

All Goya's biographers and all the art historians dealing with this master agree that the "Caprichos" are merciless comments on the cultural and political life of his time.

Goya's sketchbook contains the ink drawing that served as a study for "Al Conde Palatino." Goya had transformed the peruke of the toothpuller, whose performance he had perhaps seen on some street corner, into bushy hair; the modest coat had become a luxurious jacket, and he had hung the gold ribbon of some order around the neck. What throws light on the mystery is the striking resemblance between the toothpuller's changed costume and coiffure, and the coiffure and embroidered uniform of the Spanish Generalissimo, Don Manuel Godoy, whose portrait by Goya hangs in the Academy San Fernando, Madrid.

Godoy was the son of a country squire who had risen from a handsome young guardsman of His Majesty—by way of the King's weakness and

stupidity and the Queen's bedroom—to Private Secretary to the Queen, Duke of Alcudia, Grandee of Spain, Prime Minister and Prince of the Peace. Godoy thus had reached the highest rank attainable in Spain; for 16 years he was in effect absolute monarch of Spain, the King having virtually surrendered to him full power. Godoy collected titles, state offices, and enormous sums in taxes squeezed from the Spanish people. In a word, Godoy was a crook, and the object of hatred throughout the nation. Such is the man whom Goya represents in his etching as a toothpuller, a quack who gets everything he can out of a man and drains his lifeblood while he is at it. This is the significance of Goya's toothpuller as many of his contemporaries saw it.

When Goya realized that the meaning of this plate was no longer a secret, and that he was running more danger than he wished, he invented several explanations for this plate, one of which is as follows: "In every science there are charlatans who, without having studied a word, know everything and have a cure for everything. Do not believe what they proclaim. The true scientist is

always mistrustful of positive statements. He promises little and accomplishes much; but the Count Palatine accomplishes nothing that he promises."

These lines are a smoke screen, but in them we hear described the ignorant political charlatan Godoy.

Charles H. Land Museum, Columbia University Medical Center, New York, N. Y.

Research opportunities in dental practice

Seymour J. Kreshover. *J.Am.Col.Den.* 26:175-178 June 1959

Dental research, according to Appleton (1952), probably begins with such questions as how to treat and how to prevent departures from normal in certain structures or functions. Research broadens out to include epidemiological and sociological research, research in history and research in practice administration. Research becomes a pursuit of new ideas and new concepts.

The average dental practitioner cannot escape an obligation to contribute to research, in at least some measure, either by participation in original types of investigation, by part-time membership on a research team, or by keeping abreast of major contributions to scientific dental literature. The dentist can best establish and maintain lines of communication with his professional colleagues by attending scientific meetings, participating in seminars and informal reading groups, and matriculating in postgraduate refresher courses.

The traditional picture of a scientist stooped over his maze of complex equipment continues to be a symbol of scientific research. This distorted picture has discouraged practitioners from venturing into a field about which they presume to know so little. Presumably, the application of knowledge through a developed sense of observation, interpretation and judgment is equally obtainable in clinical study. The average dental practitioner is just as qualified to pursue research in his clinical field as the bench scientist is in his basic field.

The United States Public Health Service recently instituted a procedure whereby dental officers in installations throughout the country could consult experienced investigators. Through a series of visits, existing research programs in various dental clinics were discussed, and any necessary assistance was given to further such studies.

There is a need for more case reports, for more information on high-speed instrumentation and the comparative cutting efficiency of points of different size and composition. There is a need to evaluate new sedatives, antihistamines and local anesthetic agents. An almost endless number of projects are suitable for study in the dental office. These projects should be initiated by the private dental practitioner.

In seeking new light, one finds new light, and in finding it seeks for more.

National Institute of Dental Research, Bethesda, Md.

Heart diseases as related to your profession

Woodford B. Troutman. *J.Kentucky D.A.* 11:3:6-10 July 1959

The dentist should exercise the greatest care in treating the patient with heart disease. The most obvious way to learn if the dental patient has heart disease is to ask him. Some patients, however, may not be aware of heart trouble. The dentist may ask a few questions, such as the following: Are you short of breath? Do you have a dry, hacking cough? Do you have any chest pain or acute indigestion? Are your ankles swollen? Do you know if you have high blood pressure? Do you know if you have leakage of the heart or any heart murmur? Are you taking any medicine at this time, and if so, what for?

If the answer to any of these questions is affirmative, and if extensive dental work is planned, it may be advisable to delay the work and ask the patient to consult his physician and get clearance.

The patient with a valvular disease (commonly known as leakage of the heart), for whom extractions or other surgery is to be performed, should receive adequate doses of penicillin for prevention.

The patient with even a minor heart ailment should be given a mild, quick-acting sedative, such as secobarbital sodium, to allay his anxiety before getting in the dental chair.

The patient with heart disease should be asked

if he has ever reacted unfavorably to any type of local anesthetic. If so, a general anesthetic should be used, with adequate oxygenation.

Syncope usually is caused by anxiety; occasionally, it may be caused by pressure on the neck, or by turning the head too sharply. The patient should be placed in a supine position with the head low, and the clothing should be loosened about the neck and the waist. Possibly the patient should be encouraged to inhale a little aromatic ammonia spirit, and to swallow a little whisky as he regains consciousness. A syncope caused by a heart attack usually is recognizable by the dyspnea, cyanosis and sweating which usually accompany such an attack. A patient with syncope should be laid back in the chair, given plenty of air, and a physician should be called.

If the patient has an anginal attack in the dental chair, the dentist should help him get a nitroglycerin tablet under his tongue quickly. This is a good drug for the dentist to keep in his wall cabinet.

The patient with coronary disease may be on long-term anticoagulant therapy; his physician no doubt has instructed him to advise the dentist of this, and the patient's physician should be called for directions.

One type of heart disease, arteriosclerosis, is prevalent among dentists. Dentists are in a sedentary type of work; many are overweight and under tension most of the time; they have too much work and too little relaxation, smoke or drink too much, eat too many fats and calories, and eat too fast.

The first phase of arteriosclerosis is angina pectoris. The pain usually is of a crushing or constrictive type; usually its location is substernal, radiating to the anterior part of the chest and possibly into the shoulders, arms and elbows, and occasionally to the jaw. Attacks of angina pectoris at first may come on any exertion, especially after a meal. In the second stage of this illness, the attack may come when the dentist is just standing at his chair, or even after he has retired at night and is sleeping. This stage of the illness is acute coronary insufficiency. Eventually an attack may come which persists and is not relieved by nitroglycerin or rest; this is the third phase, or coronary occlusion with myocardial infarction. Fortunately, about 80 per cent of such patients recover from such an attack, and most are able to return to their usual occupation.

To guard against coronary artery disease, the dentist should receive mental, emotional and physical rest; he should cut down on the number of his appointments, take a longer break in the middle of the day, allow more time to digest his food, get up a little earlier in the morning and sit around a while after breakfast, and, if overweight, he should reduce.

332 West Broadway, Louisville 2, Ky.

Successful treatment by a chest blow of cardiac arrest during myocardial infarction

John T. Brandenburg. *J.A.M.A.* 170:1307-1308 July 11, 1959

The literature on the treatment of cardiac arrest is dominated by reports of open thoracotomies. Zoll and others (1955) and Roberts and others (1954), in contrast, stress that a fast chest slap is the first thing to do when the diagnosis of cardiac arrest is made. A case report confirms the value of that view.

A 64 year old man was brought to the hospital with a severe chest pain that had begun suddenly 40 minutes before, while he was playing golf. The patient lay quietly flat on his back. He complained of a "terrible" pain deep to the center of the sternum, spreading over the entire anterior part of the chest and running down both arms to the wrists. This pain was not influenced by respiration. His color was good, respiratory rate was 16 per minute, pulse was a regular 68 beats per minute, temperature was 98°F., and blood pressure was 150/80 mm. Heart tones were normal and the chest was clear. He was not perspiring but expressed relief at the sense of coolness afforded by the oxygen tent in which he was promptly encased.

Morphine sulfate, ¼ grain, had been given intramuscularly 20 minutes before the examination of the patient. Since he stated emphatically that the pain was still increasing, another ⅙ grain was given intravenously. No relief was obtained, and 20 minutes after the last injection he said that the pain was increasing. A few seconds later he announced suddenly, "I'm passing out," and became

limp, with eyes staring. No pulse could be felt anywhere, heart tones that had been clearly heard a minute before now were absent, and there was no respiration. A diagnosis of death due to cardiac arrest was made and thoughts of immediate thoracotomy were entertained; however, the advice of Zoll was recalled and three quick, heavy blows were struck on the left side of the chest with the clenched fist while the radial pulse was palpated. Just after the third blow, a strong but very irregular pulse was felt which soon became regular. The total period of asystole was estimated to be less than a minute. After ten seconds after the return of his pulse the patient regained full consciousness with the comment, "I must have passed out." He then vomited a large quantity of cloudy yellow fluid, afterward stating that his pain was gone and that he felt much better. Recovery was uneventful.

The chief cause of the dismal recovery rate in cardiac arrest is delay in instituting treatment. There is an obvious place for the chest blow in the treatment of these patients. One should not strike the chest repeatedly. If there is not an immediate response, a new approach should be taken. This simple treatment should be tried while equipment for resuscitation is being obtained.

1025 East Main Street, Medford, Ore.

Some clinical applications of a high frequency current in dental practice

Edward C. Synott, Eric A. Scher and James E. Keith. *Irish D.Rev.* 5:75-80,85 July 1959

The "Hyfrecator" is an inexpensive instrument which has been used successfully for several clinical purposes in dentistry. The instrument consists of a number of simple standard electrical components designed to convert the normal 50 cycle voltage into a damped high-frequency, high-voltage (about 2,000 v.) source of electrical energy. The apparatus was manufactured for general electrosurgical purposes; it has been found useful for the eradication of unwanted tissue in cutaneous diseases; urology; ear, nose and throat surgery; gynecology, and proctology. The instrument has the following dental uses: pulp vitality testing and assessment; removal of interdental gingival hypertrophy; gingivoplasty; frenectomy; hemostasis; removal of cysts; desensitization of hypersensitive exposed dentin, and endodontic sterilization.

In general dental practice, the most frequent use of this apparatus is in interdental papillectomy and hemostasis.

University College, Cork, Ireland

American dentistry: 1859-1959

Editorial *J.Am.Osteopath.A.* 58:581-582 May 1959

To its near neighbor, the American Dental Association, the American Osteopathic Association offers heartiest congratulations on its one hundredth anniversary. We appreciate the cooperation shown by doctors of dentistry through the years, working together to help meet the nation's health needs. From osteopathy's beginnings, relations between the two professions have been of the best.

The history of dentistry in the United States is one of progress in dental health. The educational program by which members of any profession become qualified is an accurate measurement of its standards. Modern dental education is a distinct achievement of the American Dental Association. Through its Council on Dental Education, the public is guaranteed that the professional training of dentists and of auxiliary dental personnel is of the highest caliber. In 1958 there were 47 dental schools in the United States, all associated with universities (an educational goal not attained by any other profession in the United States) and many with teaching hospitals. More than 50 per cent of the dental students of the past decade had a college degree before entering their professional school. In 1958, some 22,000 graduate dentists were enrolled in continuation courses and special clinics. In 1958 there were approved programs for 332 dental interns and 161 dental residents.

Basic to dental education is dental research, which has been sponsored by the American Dental Association since 1916. Government recognition of the high place of dental science came in 1948 with the establishment of the National In-

stitute of Dental Research as one of the National Institutes of Health at Bethesda, Md. During the coming year the government will start construction of a new building to house facilities of the National Institutes of Dental Research.

Osteopathic physicians appreciate the heavy responsibility that rests on the American Dental Association as the voluntary organization of a great profession. These men understand the dedication, devotion and sacrifice demanded for decades by the effort to secure high standing for their profession. American dentistry is part of the great technical achievement of the West, and a gift to the health knowledge of the world. The American Dental Association is the instrument that has made this a reality.

212 East Ohio Street, Chicago 11, Ill.

Effective sterilization of handpieces, right-angles and contra-angles in hot oil baths

H. Nossek and H. D. Noack. *Deut.Stomat.* 9:609-617 July 1959

Most manufacturers of dental instruments claim that their products will not rust, stain or corrode whatever method of sterilization is used. Experience in dental practice, however, fails to substantiate this claim. Dental instruments, even if properly processed, often suffer damage from sterilization by steam under pressure, dry heat or boiling water. Chemical solutions, although comparatively safe for the instruments, fail to destroy all pathogenic and nonpathogenic microorganisms and their spores.

The applicability of hot oil baths as a sterilization medium used in dental practice was tested at the Dental Clinic of the Medical Academy of Dresden, Germany.

After experimental contamination, sterile right-angle and contra-angle handpieces were consistently obtained by immersing the instruments in heavy oil baths for a period of two minutes at a temperature of 190°C.

The instruments were well lubricated after sterilization and remained in this condition during all dental procedures.

Sterilization in hot oil baths proved to be far superior to all other sterilization methods tested, and was also less time-consuming and less damaging to the instruments and their intricate gears.

Only hot oil sterilization removed completely the gross debris such as mucus, pumice, calculus, saliva, and particles of tooth filings from the inside of the instruments.

Hot oil baths offer an effective and inexpensive means for sterilization, lubrication and rustproofing of most dental instruments, and materially prolong the life of handpieces, right-angles and contra-angles.

Fiedlerstrasse 25, Dresden A 16, Germany

The art and science of research

James H. Scott. *Brit.D.J.* 106:387-389 June 16, 1959

Research is for the modern world what philosophy was to the Greeks, the art of government to the Romans, and theology to the Middle Ages. It is the intellectual fashion of our times.

The findings of research do not always prove what they were intended to prove. Although the ability to devise elegant research technics is one kind of intellectual activity, it differs from the ability to appreciate the full significance of the consequent findings. It is a common mistake to associate research with elaborate equipment and large amounts of available money. Mendel working with his sweet peas in the monastery garden, Morgan investigating the genetic structure of fruit flies, Miller at Berlin placing teeth in acid solutions—these men, by simple means, opened the gates into great new worlds of knowledge.

Among the qualifications for research are curiosity, persistence and clarity. There is no reason why a dentist in practice should not carry out useful and stimulating research providing he has the necessary mental attitude. Among possible subjects for research are facial growth, conditions involving the health of the oral mucosa, individual variation in the rate of tooth eruption, histological studies on age changes in gingival structure, the healing of sockets, and the variations in tooth drifting and tilting after extractions.

Research is merely the process of obtaining a partial answer to imponderable problems.

Perhaps more time, ink and paper have been spent over the problem of caries than over any

other disease except cancer, and most of the work has been wasted. Since Miller showed that fermenting carbohydrates produce tooth decay, we have known half of the answer but we have never solved the other half which can be put in the form of the question: "Why under the same conditions of acidity do some teeth decay faster than others and some not at all?" We know a lot about the process of disintegrating enamel, but we know little about what holds enamel together, and it is here that the key to the problem lies. It is no use asking what holds the adjacent prisms together; the fundamental question is what holds the submicroscopic crystallites which make up both prism substance and interprismatic substance in whatever physicochemical union unites them.

Consider the problem of periodontal disease. What a tremendous amount of time has been wasted because so many people have overlooked the simple, yet fundamental, fact that the epithelium around the gingival margin, where gingiva meets tooth, is dying epithelium—we miss the simplicity of this fact in speaking of such phenomena as keratinization. What matters is the rate at which the dying epithelium is replaced from below. The key to the problem lies along the basement membrane between epithelium and dermis and in the physiological processes occurring there.

In orthodontics, the fundamental question is: "What is the relationship between bone growth and the growth of the gingival tissue?" The answer lies at the junction of alveolar bone and gingiva where the mucoperiosteum is laying down the growing bone.

Queen's University, Belfast, Northern Ireland

An odontologic examination of the remains of Erik XIV

Lennart Lysell. *Tr.Roy.Schools Den. Stockholm and Umeå* 1:22-35 1958

The remains of Erik XIV (1533–1577), King of Sweden, were recently subjected to exhaustive examination. The dental examination was conducted by the author.

During his lifetime, Erik XIV had a full complement of 32 teeth, only two of which (upper left first bicuspid and upper right first molar) were carious. Calculus of the light supragingival type occurred abundantly in both upper and lower jaws, on the buccal and lingual surfaces of teeth. All the teeth were affected moderately by attrition. On all incisors and cuspids except the upper right cuspid, a small zone of dentin was exposed. Periodontal disease was noticable, with extensive bone resorption, especially in the molar region. Measurements of the teeth revealed no significant deviation from the measurements of other medieval Swedish skull material (Lysell, 1958) or of contemporary Swedish skulls (Seipel, 1946).

A roentgenographic examination revealed periapical changes under the two carious teeth, and deposits of calcium in most of the pulp chambers. There was crowding in both dental arches, particularly in the lower arch. The arches were narrower but longer than usual. Horizontal and vertical overbites were normal, occlusion was good, and the palatal vault relatively high.

Royal School of Dentistry, Umeå, Sweden

Dental wax sculptures at the Dental Museum of Milan

G. Fasoli. *Acta stomat.Padua* 5:67-75 March 1959

Beeswax possesses properties which render it a most convenient material for preparing figures and models of normal and pathologic facial or oral conditions. This can be accomplished by either modeling or casting. At normal temperature, beeswax can be cut and shaped with facility; it melts to a limpid fluid at a low heat; it mixes with any coloring matter and takes surface tints well; and its texture and consistency may be altered or modified by unrefined substances, oils or fats.

Wax sculptures of their deities were used in funeral rites by the ancient Egyptians, and deposited among other offerings in catacombs and pyramids; many of these are now exhibited in museums.

With the renaissance of art, modeling in wax was practiced by some of the greatest of the earliest masters. The modeling of anatomic parts of the human body was first practiced in Florence in 1600. Such preparations had formed parts of medical shows since 1700, and from that time

waxworks, on a plane lower than art, have been popular attractions. The most famous exhibition of wax sculptures is that of Marie Tussaud in London.

By using ancient and modern technics of casting, modeling and coloring wax sculptures, the author produced a series of anatomic models to demonstrate the pathologic changes occurring in the human maxillofacial region. Various types of natural and synthetic wax were used to reproduce in minute detail every somatic feature of the face and the oral cavity, as well as ulcerations, abscesses, aphthae, carious cavities, clefts, cysts, eczemas, fractures, furuncles, malocclusion, tumors, and so forth, occurring in or about the mouth.

Many of these anatomic reproductions are exhibited at the Museum of the Clinica di Odontoiatrica in Milan.

Via Montona 4, Padua, Italy

Action of emollient creams and their additives

I. H. Blank. *Schweiz.Mschr.Zahnhk.* 69:254-255 March 1959

Some confusion seems to exist among medical or dental practitioners, pharmacologists and cosmetic chemists as to the meaning of the term "emollient." An emollient may be defined as any externally applied agent which softens or soothes the skin, thereby preventing or counteracting abnormal dryness of the irritated regions.

Mild skin inflammation may be apparent only as superficial dryness or scaling, but extrinsic or intrinsic dermatitis may be accompanied by considerable scaling, fissuring and inflammation, causing severe pain and unbearable itching.

If the terms "emollient" and "skin dryness" are so defined, it becomes clear that the emollient creams produced by the cosmetic industry and the emollient ointments prescribed by dermatologists have much in common. The majority of emollient agents, cosmetic or pharmaceutic, are mixtures of specific oils and water. An emulsifying substance is usually added to keep the ingredients well mixed and occasionally a perfume is added.

Physical stimuli such as friction and exposure to radiation, chemical stimuli and certain pathologic conditions produce inflammation of the skin, thickening of the stratum corneum and thereby dryness of the epithelial and granular layers as well as abnormal keratinization. Frequent exposure to warm solutions of soaps or detergents also may increase the adverse effects of physical or chemical stimuli already experienced. Symptoms of this kind are frequently observed on the hands of dental or medical practitioners.

The action of most emollient creams, however, is primarily a surface phenomenon, and the importance of the penetration of the specific oils or the additives into the skin has been overemphasized by the manufacturers.

Recently, vitamin A or estrogen has been added to some emollient creams. It has been claimed that vitamin A accelerates the fluid control in the stratum corneum, and that estrogen delays or reverses the aging process in the skin. Little evidence was presented to prove that an emollient cream containing vitamin A is more beneficial than is an emollient which does not contain this vitamin. It is easy to understand why estrogen has been added to some emollient creams. The aging processes in the skin of women occur at a time when the normal production of estrogen decreases. Estrogenic compounds, topically applied, cause hydration of the dermis. It is questionable whether the replacement of normally produced estrogen by an additive to an emollient cream can control any cutaneous changes (whether or not produced by aging), and—even if so—whether such an effect can be accomplished by a topical application. Undesirable systemic effects of topically applied estrogen have been reported (Goldberg and Harris, 1952).

Clinical evidence to support manufacturer's claims that the addition of either vitamin A or estrogen has beneficial effects on pathologic conditions of the skin is lacking.

A decision as to whether commercial emollient creams or any of their so-called "therapeutic" additives might be effective in the control of skin dehydration and dermatoses occurring on the hands of dentists or physicians should be postponed until further investigations have been completed.

Massachusetts General Hospital, Boston 14, Mass.

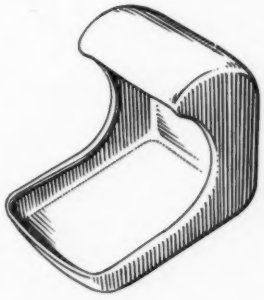
New equipment

The information reported here is obtained from manufacturers. Dental Abstracts *does not assume responsibility for the accuracy of the information. The interested reader may direct his inquiry to the manufacturer.*

An optical dental probe projects a magnified view of the teeth or any part of a patient's mouth onto a large television screen for diagnosis and teaching. The probe consists of a bundle of optical fibers bound together in a whiplike cable, with a lens the size of a fingertip at the probing end. The probe is coupled to a closed-circuit television camera. The device is being developed under contract with the Office of Naval Research, for dental and medical use. *Avco Research and Advanced Development Division, 201 Lowell St., Wilmington, Mass.*

The "Den-Shur-Cup" is an unbreakable container designed to help in the cleaning and storing of complete or partial dentures. The polyethylene container is available in four colors—white, pink, blue or mint green. *Catalin Corp. of America, One Park Ave., New York 22, N.Y.*

A double cabinet sterilizer model DB-16M has a large Formica work counter, with recessed, boiling-type, office instrument sterilizer measuring 4 inches deep, 6 inches wide and 16 inches long. The non-pressure sterilizer is insulated, constructed of stainless steel, and has two trays—one for instruments and one for needles. The cabinet is 33 inches wide, 20 inches deep and 35 inches high. It is offered in ten colors. Literature is available. *American Sterilizer Co., P.O. Box 620, Erie, Pa.*



A splash pan and dust collector for the dental profession is made of flexible polyethylene, in yellow, white, brown, silver, turquoise, gold or natural shade. Should the centrifugal force of the buffing wheel dislodge the denture from one's hands, the polyethylene collector cushions the effect. The one-piece collector is easy to clean. *Surgident, Ltd., 3871 Grand View Blvd., Los Angeles 66, Calif.*

Doctoral and Masters' dissertations

In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.

Microorganisms associated with cellulitis and their sensitivity to antibiotics. *John Marvin Adams. 1959.* M.S. *College of Physicians and Surgeons of San Francisco.*

In vitro studies on marginal leakage of restorative materials as assessed by Ca^{45}. *Marjorie Louise Swartz. 1959.* M.S. *Indiana University.*

Roentgenographic study of the trabecular patterns of the alveolar processes of the human maxilla and mandible. *Nicholas J. Brescia. 1959.* M.S. *Loyola University (Chicago).*

Electromyographic study of mandibular posture as influenced by horizontal changes of head posture. *Gilbert V. Carter. 1959.* M.S. *Loyola University (Chicago).*

A radiographic cephalometric study of certain occlusal mandibular movements in individuals possessing malocclusion of the teeth (Class II, Division 1, Angle). *Arnold R. Cook. 1959.* M.S.D. *Northwestern University.*

The clinical laboratory as an aid in dental diagnosis (El laboratorio clínico como auxiliar en diagnósis odontologico). *Salomón Cabezas. 1958.* D.ODONT. *Central University of Ecuador.*

A study of abrasion (Estudio de la abrasión). *Jorge O. Jácome. 1958.* D.ODONT. *Central University of Ecuador.*

Surgical treatment of diseases of the maxillary sinus (Tratamiento quirúrgico de las afecciones del seno maxilar). *Guillermo Zurita. 1958.* D.ODONT. *Central University of Ecuador.*

Roentgenographic technic with bitewing films (Tecnica radiográfica con películas de aleta y mordida). *Edmondo Santacruz. 1959.* D.ODONT. *Central University of Ecuador.*

Relation of the inferior dental canal to the third molar. *Carlos Lasse. 1958.* D.ODONT. *Central University of Ecuador.*

Comparative study of acetate of hydrocortisone and a combination of hydrocortisone with antibiotics in periodontal disease. *Guillermo Uquillas. 1958.* D.ODONT. *Central University of Ecuador.*

Refinement of complete dentures with esthetic gingivae (Elaboración de prótesis totales con encías estéticas). *Jaime R. Valleho. 1958.* D.ODONT. *Central University of Ecuador.*

Amalgams of silver and copper in temporary fillings (Amalgama de plata y amalgama de cobre in piezas temporales). *Sixto Proaño. 1958.* D.ODONT. *Central University of Ecuador.*

Maxillofacial surgery (Cirugía reparadora maxilo facial). *Manuel Mariño. 1958.* D.ODONT. *Central University of Ecuador.*

Statistics on dental anomalies and destructive lesions of the hard tissues in Quito students (Estadística de las anomalías dentarias y lesiones destructivas de los tejidos duros en los dientes de los escolares de Quito). *Vicente Gutiérrez. 1958.* D.ODONT. *Central University of Ecuador.*

The CAO (DMF) index in school children 12 to 16 years old in Loja (Indice CAO-DMF en los escolares de la ciudad de Loja, edad de 12 a 16 años). *Guillermo Uquillas. 1958.* D.ODONT. *Central University of Ecuador.*

Treatment of postextraction hemorrhage with Hemostop (Tratamiento de las hemorragias postextracción con Hemostop) *Antonio Chacón B. 1958.* D.ODONT. *Central University of Ecuador.*

Use of high speed with the Dentatron in pulpotomies and pulpectomies (Aplicación de la alta frecuencia en pulpotomías y pulpectomías con el Dentatron). *César Oswaldo Reyes. 1958.* D.ODONT. *Central University of Ecuador.*

Observations on the acid mucopolysaccharides of human gingiva. *Stig D. Schultz-Haudt. 1959.* ODONT.DR. *Norwegian State Dental School.*

The mandibular condyle. *H. J. J. Blackwood. 1958.* M.D. *Queen's University, North Ireland.*

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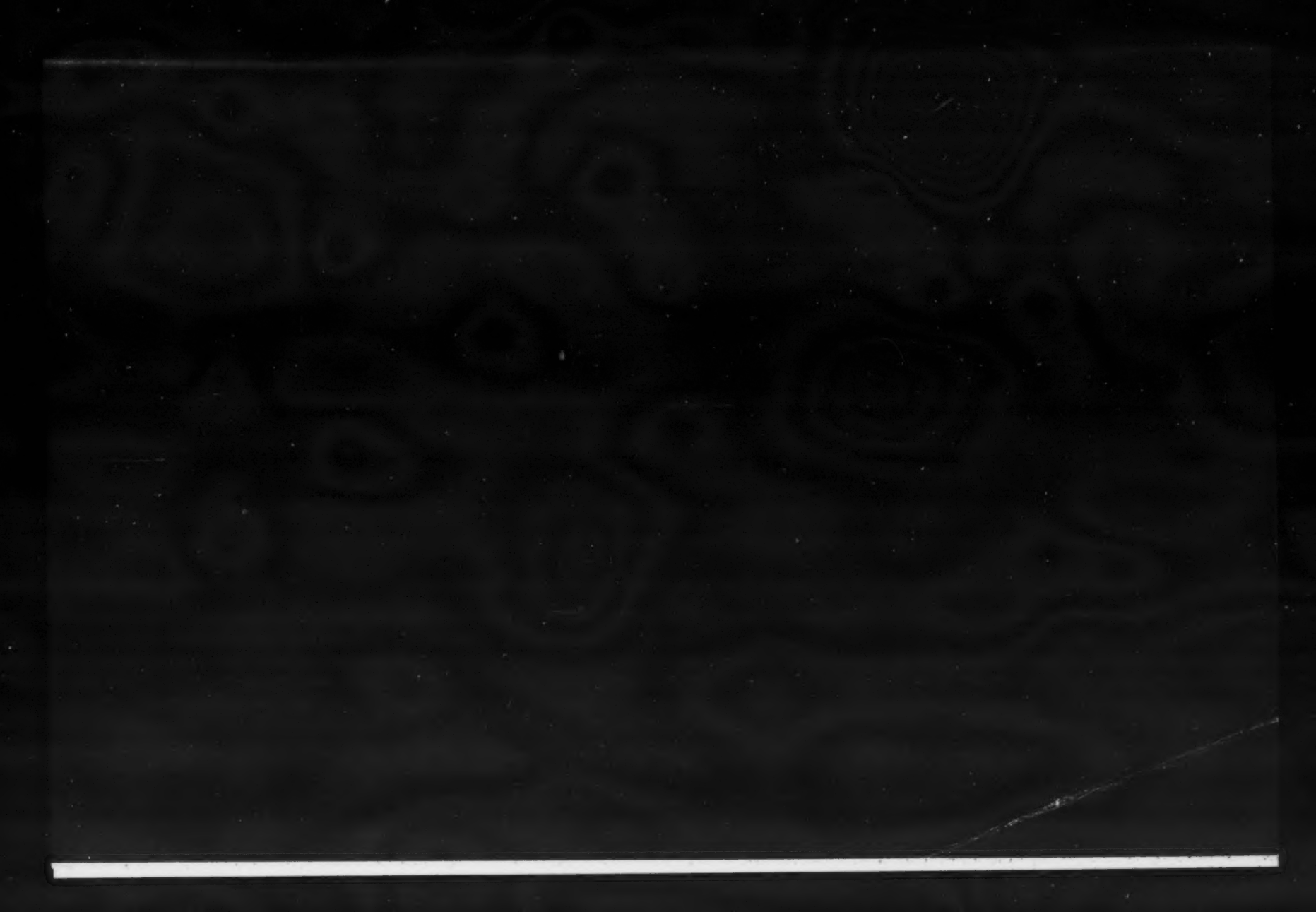
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